

Social Spatial Polarization in the Toronto Metropolitan Area

by

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## Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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## Abstract

This thesis presents evidence that income polarization is accompanied by increasing social-spatial disparities between areas of the city that were developed in different societal contexts, with different planning approaches, and that have different land use and transportation dynamics. An analysis of the social structure of the Toronto Metropolitan Area finds indications of widespread gentrification in the inner city, socioeconomic decline in the post-war suburbs, and sustained household affluence in the ever expanding outermost suburbs of the metropolitan area. It is argued that, as a political and social endeavor that is embedded in broader development regimes, urban planning influences social-spatial polarization to the extent that it influences urban form.

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## 1.0 Introduction

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In the era of globalization, social disparities are increasing in cities around the world. Research has progressed from elucidating the intricacies of social stratification within the premier world cities, such as New York and London (Harloe and Fainstein, 1992), to identifying processes whereby global economic forces and the restructuring of urban economies drive increasing metropolitan socioeconomic inequity (Storper and Scott, 2009, Scott, Agnew, Soja, & Storper, 2001). A relatively recent touchstone in the long and rich discourse on urban inequities is Sassen's (2001) *The Global City*, in which she linked occupational restructuring to social and spatial polarization. This work has inspired much investigation into polarization, but the concept has remained difficult to pin down. A more limited understanding of polarization has defined it in terms of changes in the occupational structure and the earnings distribution, while a more liberal approach has been to consider changes in the broader social spatial structure (Nørgaard, 2003). There are arguments for conceptualizing polarization in terms of more than occupation and earnings. In addition to shifts in metropolitan economies, demographic trends such as immigration and changes in household composition have also been implicated in intra-metropolitan disparities (Bourne and Rose, 2001, Wyly, 1999, Baum, 1997, Baum et al., 2006), as have changes in social welfare supports (Hamnett, 1996, Musterd and Ostendorf, 1998). The confluence of these trends may actually put an increasing many at a socioeconomic disadvantage, as they advantage many others, in terms of "unequal access to resources and life-chances", as is argued by Baum, Haynes, Van Gellecum and Hoon Han (2006, p. 1550).

One argument that has been consistent in the literature is that polarization involves changes in the distribution of income among urban residents. Income polarization is a process whereby the population is increasingly divided into the rich and poor, with a decline in the middle income population over time (Chiu and Lui, 2004, Tai, 2006, Burgers, 1996, Baum, 1997). The process involves the re-concentration of the population away from the middle and towards the extremes of the income distribution, leading to a bimodal, rather than a unimodal distribution (Wolfson, 1997, Esteban and Ray, 1994, Esteban, Gardín and Ray, 2007, MacLachlan and Sawada, 1997). Measures of polarization look at changes in the share of the

metropolitan population at a range of income levels (Esteban and Ray, 1994, Kloostermann, 1996 in Sassen, 2001, MacLachlan and Sawada, 1997).

The crucial impact of this statistical change is reflected in the day to day lives of urban residents. In her global cities thesis, Sassen (2001) writes:

[Polarization is] not just a matter of growing inequality but also a qualitative transformation in the social forms emerging out of the increased distance between the world of work and home of the new professional strata at the top and the world of work and home of those at the bottom. (p. 244)

There is evidence of polarization trends in cities as diverse as Hong Kong, Sydney, and Toronto (Chui and Lui, 2004, Baum, 1997, Walks, 2001). It has been asserted that all cities impacted by processes of globalization, neoliberal policy shifts, and cultural and demographic change may reflect a common tendency towards polarization, although the nature and extent of this impact varies (Marcuse and van Kempen, 2000).

It may be expected that polarization would alter metropolitan social structure, which is interpreted here as patterns of residential congregation and segregation within the urban space of advanced capitalist society (Pacione, 2001). Spatial inequity in globally integrated cities may lead to rising living costs in central locations and create housing affordability problems for low-income residents, which pushes them to move to peripheral areas (Fainstein, 2001). However, the ways that polarization is related to changes in social spatial structure are not clear (van Kempen, 1994). Sassen (2001) argues that a number of social spatial forms have arisen from polarization, such as the development of urban mega projects like Battery Park in New York City, and “sharp increases in spatially concentrated poverty and physical decay” (p. 257), but she does not draw definitive connections between polarization and spatial change. Instead, Sassen (2001) raises the question as to “whether we are seeing the formation of a new territorial complex at the level of the spatial and institutional arrangements in cities dominated by corporate services and finance” (p. 257).

Social spatial polarization may also be linked to the built environment. It has long been argued that the physical form of the city and urban social structure are deeply interconnected (Soja, 1980, Knox, 1991). Social processes not only affect the process of urbanization and the resulting urban form, but urbanization affects social processes once the built form is

constructed and patterns of social variation are entrenched within it (Soja, 1980 Harvey, 1985). In recent years, phenomena such as gentrification, suburban poverty, and the growing popularity of exclusive common interest communities have had potentially deep implications for metropolitan equity (Hackworth and Smith, 2001, Smith, 2002, Grant, 2005, Townshend, 2006, Cooke and Marchant, 2006, Lee and Green Leigh, 2007). However, despite the growing literature that implicates urban form in processes of social segregation, insulation and marginalization, the connection between polarization and urban form appears to be becoming increasingly tenuous.

There have been posited in the literature a number of possible ways that metropolitan social-spatial structure could change with polarization, and how the built environment may affect these changes. With the pervasive influence of global economic factors, it has been argued that urbanization processes have become exceedingly complex and unmoored from the locational factors of the past (Dear and Flusty, 1998). In contrast, Beauregard and Halia (1997) argue that longstanding capitalist logics and the durability of prior investments and commitments “dampen the possibilities for sudden transformations in spatial form” (p. 328). Others argue that the interaction between the global and the local leads to divergent outcomes in different places (Burgers and Musterd, 2002). Marcuse and van Kempen (2000) list a number of contingencies that affect urban social-spatial outcomes, such as the particular neoliberal policy context, the pre-existing natural and built environment, pre-capitalist, non-capitalist and colonial histories, the level and type of national development, past racial and ethnic relations, and the past level of polarization. Certainly, the level of polarization within a city will depend on a number of factors, as will its spatial manifestation. Yet, there is research that suggests that there are common patterns of investment and disinvestment emerging in larger cities where there is a concentration of economic activity in advanced business services, and neoliberal development policy (Hackworth, 2005, Skarbuskis and Moos, 2008). It is not clear whether social spatial polarization may be associated with an increasingly random social structure and urban form, the enhancement of past spatial divisions, or the emergence of new ones, if there is any change at all.

This research seeks to build on past findings by investigating income polarization, stability or change in metropolitan social structure, and the ways that social spatial polarization have been articulated across the divergent urban forms of the city. It is hoped that the research

that follows will shed light on the following questions: In what ways does social spatial polarization differ from the urban social spatial stratification of the past? Is polarization leading to a new metropolitan social structure? In what ways might the built environment be implicated in an emerging social structure? What does this mean for urban planning?

This study focuses on the metropolitan scale, because it is at this scale that diverse actors participate in, and are affected by the many social, economic and political shifts that contribute to polarization, social spatial differentiation and urbanization. In a globalizing context, when nation states no longer contain and manage economic growth as they did in the mid-twentieth century, the metropolitan scale has become critical to an institutional and territorial reorganization, in which diverse actors seek to enhance the supranational and global competitive advantage of cities and city regions within the new transnational urban system (Brenner, 2004, Swyngedouw and Baeten, 2001, Kipfer and Keil, 2002). There are new efforts to co-ordinate both urban and suburban growth for the development of the metropolitan area overall (Wheeler, 2002). Old debates about whether metropolitan-wide government or inter-municipal competition would result in the most efficient and fairest planning policy, taxation and service provision have given way to a belief that metropolitan regions must forge consensus-based strategies among local governments, the private sector and NGOs to effectively manage region-wide problems so as to better compete globally (Wolfe, 2003). Attempts to regulate growth at the metropolitan scale must reconcile efforts to improve the city's position as a globally competitive one for business and investment with the growing imperative to address social spatial disparities. The metropolitan scale is not the only scale at which income levels are diverging, and polarization has been shown to be occurring within neighbourhoods, between neighbourhoods, and within and between the city and the suburbs (Walks, 2001, Bourne, 1992, Hulchanski, 2007). Nonetheless, it is useful to consider the spatial aspect of polarization at the metropolitan scale, because it is at this scale that the political and economic strategies of divergent actors intersect with the built environment to shape social structure.

The discourse on metropolitan polarization has largely taken place in the realm of urban geography and sociology, but it poses a number of important questions for urban planners. The formulation of planning interventions depends on our understanding of how everyday lives are both shaped by and shape the city. It is important to revisit this

understanding at a time when globalization, demographic trends and political shifts are causing a simultaneous increase in the population of the poor and rich in cities around the world. As Beauregard (1989/2003) argues, for planners to work towards equity goals it is necessary “to recognize the emergence of a post-Fordist city of dynamics and forms” (p. 120). As rapid suburban expansion was associated with inner city decline in the decades after WWII, so too might contemporary land use and transportation dynamics be a factor in the organization of contemporary metropolitan social structure (Bunting and Filion, 2001). If this is so, as a political and social endeavour that is embedded in broader development regimes, urban planning influences social spatial polarization to the extent that it influences urban form.

In the following chapter, the theoretical framework that guides the present research is presented. The framework begins by exploring metropolitan trends, including occupational restructuring, the increased variability of living arrangements, and the economic integration of immigrants. The implications for income polarization and spatial change are discussed. Variables of interest are identified, and it is argued that changes in the selected indicators of social status may contribute to the socioeconomic advantage of some residents and the socioeconomic disadvantage of others. Following this, a temporal and geographic basis with which to compare current patterns is established by examining the nature of urbanization within the context of the Fordist regime. Economic and political changes that have occurred after the Fordist period are then discussed to provide a context for polarization. This includes the shift in metropolitan economies towards the service sector, the embedding of key subsectors in global flows, and the adoption of neoliberal strategies for metropolitan governance. The meaning of urban form is then unpacked by considering contemporary urbanization processes that are leading to suburban dominance and inner city resurgence. This theoretical discourse is then placed in the context of our changing understanding of the city from classical urban ecology to the political economy approach and postmodern urbanism. The framework positions us to consider competing theories on the possible outcomes of a polarizing metropolitan social structure, which are grounded in different research approaches, and which draw from literature on polarization, post-Fordism, globalization and neoliberalism. The Toronto Metropolitan Area is presented as the city of study, and the accumulating research on polarization in Toronto is assessed. The framework concludes with the presentation of four hypotheses.

The methodology is outlined in chapter two. Data from the 1971 and 2006 censuses are used to measure changes in metropolitan social structure in the Toronto Census Metropolitan Area. Changes in the distribution of per capita and household income among census tracts are measured with histograms, quantiles and indices. Maps of census tract concentrations and clusters are created for social status indicators that are related to income polarization. The location of spatial patterns for each social status variable is then compared to the boundaries of the inner city, the post-war suburbs, the outer suburbs and the urban fringe. The concentration of social status indicators is calculated for each urban zone and for relatively low, middle, and high income ranges. Findings are presented in chapter three. The final chapter presents a description of Toronto's social structure in both the Fordist and the after-Fordist periods, and discusses the results and their implications for urban planning.

## 2.0 Framework

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### 2.1 Key Factors in Polarization and their Spatial Articulation

This section examines how income polarization is related to metropolitan changes, such as metropolitan economic restructuring, the increased variability of living arrangements, and the economic integration of immigrants. The ways that each trend may be expressed in intra-metropolitan spatial patterns are considered. This discussion provides an opportunity to unpack the implications of polarization, and to identify variables of interest for the current research. The literature on the socioeconomic changes that contribute to income polarization is used to qualify the meaning “socioeconomic advantage” and “socioeconomic disadvantage”. Metropolitan economic restructuring is related to income polarization, and has been linked to processes of inner city gentrification, increasing suburban poverty, and the continued allure of suburban homes for affluent households. Nonetheless, the spatial outcomes of intra-metropolitan socioeconomic disparities have been shown to be highly varied. It is established that occupation, education, and labour force status variables are of interest when studying income polarization. While changes in socioeconomic status affect income polarization among individuals, the increased variability of living arrangements further impacts income polarization at the household level. The increase in women’s labour force participation may also have an affect on household income polarization, although the affect on individual income polarization is not clear. The social geography of household composition may not have changed much despite these trends, but how this geography intersects with variations in income levels may have changed. Household size and the number of income earners in a household are identified as variables of interest. Finally, the literature on the economic integration of immigrants and income polarization is reviewed. As immigration has become an important factor in metropolitan growth and social structure, the settlement trajectories of immigrants have become more varied, reflecting both the increased heterogeneity of newcomers and polarization. The length of time since immigration to Canada may have simultaneously positive and negative effects on income polarization. These social and spatial trends combine to foster socioeconomic advantage and disadvantage in polarizing cities.

Changes in the occupational and earnings structure of cities are associated with new processes of social, economic and spatial polarization. Simultaneous growth in high-skill, high-



income professional and managerial jobs along with growth in low-skill, low-income jobs was first identified in the premier world cities of London, New York and Tokyo (Sassen, 2001, Harloe and Fainstein, 1992, Castells and Mollenkopf, 1991). Empirical evidence of occupational restructuring and income polarization has since been found in a number of cities around the world (Chiu and Lui, 2004, Tai, 2006, Baume, 1997, Vattovaara and Kortteinen, 2003, Walks, 2001). The growth in business and financial services, some of which are embedded in global production networks, has been connected to increasing numbers of professional and managerial jobs, positions which are often well compensated and require higher levels of educational attainment (Sassen, 2001). Many lower status jobs have simultaneously been created in the growing service sector, which offer lower pay and typically do not require a high level of education. The shift in metropolitan economies in the developed world away from labour-intensive manufacturing and towards tertiary services, and high-technology, capital-intensive industry has increased the demand for both high-skilled, and low-skilled labour (Storper and Scott, 2009). However, Hamnett (1996) finds that the process of income polarization can occur without a large increase in low-status jobs. In cities where income polarization has occurred without an increase in low-paying jobs, Hamnett argues that this is due to government provision of social benefits that allow people to live outside of the labour force, and thus reducing the supply of labour for low-wage jobs. He identifies a process of “professionalization”, in which there is an increase in managers and professionals in the metropolitan occupational structure. Either the bifurcation of the workforce between highly compensated and low-wage occupations, or the simultaneous professionalization of the workforce and labour market exclusion may be more or less appropriate in describing a given city (Burgers, 1996, Burgers and Mustered, 2002, Marcuse and van Kempen, 2000). Another caveat is that higher levels of education may not always translate into higher incomes. A considerable number of workers in low-paying jobs, whose presence is integral to the social and spatial transformations that take place in a globalizing city, hold foreign professional-level credentials that are not recognized in the local labour market (Baum, 1997, Picot, 2004, Reitz, 2001). Moreover, the gentrification literature suggests that residents, who have high levels of educational attainment or high cultural savvy, but not necessarily high incomes, play a role in neighbourhood transformation (Rose, 1984, Allen, 2007). The labour force status of urban residents may also affect polarization. Post-Fordist theories that address labour market

fragmentation posit that there is an increased risk of unemployment in all economic sectors, although this risk is higher in lower status jobs (Harvey, 1990). Studies of urban decline and deprivation have linked spatial disparities to high local unemployment rates (Broadway, 1989, Ley and Smith, 2000). Thus, variables that capture occupational, educational, and labour force status are of interest in the study of income polarization.

The studies of intra-metropolitan socioeconomic disparities show that the spatial outcomes of polarization are highly varied. In the study of Toronto that inspired this research, Walks (2001) found that professionals have become increasingly concentrated in the inner city, settling in luxury condos and gentrifying neighbourhoods. The unemployed and workers in lower-status service jobs remain concentrated in the inner city, but they increasingly reside in low-rent and public housing in the inner suburbs. Nonetheless, because suburban and exurban household incomes have risen relative to the inner city and older suburbs, Walks finds that apart from central elite neighbourhoods “income would appear to be decentralizing” (p.433). Walks does not account for zonal differences in household composition, which may affect differences in household income (Wyly, 1999). Similarly, Kesteloot (2000) finds that spatial polarization in Brussels is occurring in a way that deepens the contrasts between the suburbs and the city, despite the reconfiguration of inner city social structure. Municipal efforts to attract international investment through commercial and residential redevelopment in the inner city have elevated housing prices, displacing poor residents who have become concentrated in the west of the inner city. At the same time, affluent residents continue to move to the suburbs of Brussels. Based on this evidence, it would not be reasonable to say that the movement of higher income residents into inner city locales that had long been dilapidated has in aggregate made the inner city the locus of metropolitan advantage, or that the degrading of once solidly middle class suburbs is indicative of the decline of suburbs in general. Yet, these findings could indicate that in the polarizing metropolis, social spatial differentiation is occurring in a new direction. From their study of Australian cities, Baum, Haynes, Gellecum, and Hoon Han, (2006) assert that “gentrified and redeveloped inner-city localities have now firmly been established as part of the advantaged socio-spatial landscape” (p. 1573). This has occurred along with a “spatial shift in [socioeconomic] advantage and disadvantage whereby inner-city locations are no longer the sites of disadvantage, but rather disadvantage has tended to be increasingly suburbanized” (Baum et al., 2006, p. 1753). Nonetheless, in an earlier study Baum

and his colleagues identify a spatially extensive working-class community that is mostly located in the suburbs and is neither rich, nor poor (Baum, Mullins, Stimson and O'Connor, 2002). It also appears that proximity to suburban employment centers is related to socioeconomic change in some suburbs. Vattovaara and Kortteinen (2003) find that with the rise of the ICT industry in the Helsinki metropolitan area, the western suburbs around the University of Technology have become a centre where highly educated workers are concentrated, while low income and chronically unemployed residents have become concentrated in the working-class suburbs to the east of the city. Taken together, these case studies show that each city has unique and intricate spatial patterns. Nonetheless, common findings include evidence of increasing, though not absolute polarization, inner city gentrification, and in increasing suburban poverty despite the continued allure of suburban homes for affluent households.

Factors in addition to changes in the occupational structure of cities may contribute to polarization. The increasing labour force participation of women may influence polarization, since female employment has been increasing in both high-status managerial and professional jobs, as well as lower-income service sector jobs (Baum, 1997, Chiu and Lui, 2004). For example, Rose and Villeneuve (1994) find that in certain sectors of the Montreal economy of the 1970s, the occupational structure for women was more polarized than for men, but that overall female occupational polarization was mitigated by rising employment in mid-level, white collar and technical jobs in the public sector. A review of the literature leads Khun (1995) to conclude that the effect of women's labour force participation on overall labour force polarization is unclear. Trends in the related concept of income inequality are also mixed. Inequality in weekly earnings increased for both male and female full-time workers from 1980 to 2000 (Boudarbat, Lemieux, and Riddell, 2006). Inequality in hourly wages increased for male workers with at least one year job tenure from 1981 to 1997, but decreased for female workers (Fortin and Schirle, 2006). Nonetheless, the increase in female labour force participation may be indirectly linked to polarization at the household level. At a national scale, Fortin and Schirle (2006) find that assortative mating and changes in family composition, such as an increase in single parent-hood accounted for a greater percent of the increase in family earnings inequality than did increasing female labour force participation in the eighties and nineties. It is unclear how the increase in female labour force participation that

has occurred in past decades has contributed to polarization in individual incomes, but this secular trend is part of a number of lifestyle changes that may affect polarization in household incomes.

A great deal of cultural and demographic change has occurred contemporaneously with political and economic transitions, leading to a general tendency for fluidity in lifestyles. Rose and Villeneuve (2006) describe this fluidity as “the increased possibility and social acceptability of moving in and out of different living arrangements as emotional connections and economic necessities change” (p. 148). Declining fertility rates have contributed to smaller household sizes, on average, as have cultural norms that legitimize a greater variety of life choices. Increased female labour force participation and education levels enable more women to pursue careers, gain greater economic independence and make a greater contribution to household incomes. Longer life expectancies and improvements in health and medical technology have also allowed more seniors to live independently as they age. There has been an increase in divorce, but also in the formation of blended families, and in Canada, the legalization of same-sex marriages, altogether making household composition more variable.

However, these transitions can increase the risk of economic hardship, as the increasing costs of living in large urban areas make it difficult to support a household on one income. The increased fluidity and variability in living arrangements contributes to polarization between increasingly prevalent single-income and dual-income households (Bourne and Rose, 2001). Single-earner households are more vulnerable to the perils of unemployment. Moreover, meeting living expenses can be particularly difficult for single-earner households whose members are at greater risk of being low-income, such as those with major disabilities, the elderly and single-parent families. In contrast, dual income households have higher combined incomes and have greater means to navigate uncertainties in the labour market. Divergence in household incomes is reinforced by the tendency for people to choose partners who have a similar socioeconomic status to themselves. Yet, female labour force participation has also allowed many moderate income families to move upward in the housing market (Rose and Villeneuve, 1998). In addition to the types of jobs held by household members, household composition, and in particular the number of earners in a household may have an independent affect on income polarization, as these factors “can either mitigate or intensify the effects of

occupational polarization on the redistribution of per-capita income” (Rose and Villeneuve, 1993, pp. 173-174).

The spatial patterns of household composition may have changed as female labour force participation has increased and non-nuclear family households have become more common throughout metropolitan areas. However, changes in household composition do not necessarily lead to changes in spatial patterns. Strategies to maintain household incomes in response to labour market insecurity, such as through the earnings of both members of a couple or of adult children living at home, may maintain the average household size and middle income level of many neighbourhoods (Forrest and Kennet, 1997). Whereas, smaller households in the inner city were once associated with low-incomes, these households now include increasing numbers of well-compensated managers and professionals (Ley, 1996, Melingrana and Skabruskis, 2005). Moreover evidence of rising poverty in aging suburbs counters the Fordist coupling of suburban family status and middle class lifestyles (Cooke and Marchant, 2006, Lee and Green Leigh, 2007). It is unclear whether polarization between households with different earnings capacities contributes to spatial change. Household polarization may reinforce the patterns of classical urban ecology, in which household incomes tend to rise with family formation, and suburban neighbourhoods have a high presence of families, higher incomes and larger households, on average when compared to the inner city. In an analysis of Minneapolis-St. Paul, Wyly (1999) shows that the suburbs still appear to be largely family oriented in both their demographic profile and housing stock, although disparities between different types of families have widened across the city. As female labour force participation has increased across space and across the income distribution, this factor has become less relevant to neighbourhood family status than it was in the 1950s and 1960s, when female labour force participation was low in the suburbs. At the same time, the residential choices of higher-income, childless couples, including empty nesters, have had an increasingly upward effect on neighbourhood status. These dual income households have become more advantaged over time due to longer work weeks and the benefits of both partner’s income. The presence of these advantaged households is not limited to wealthy enclaves, but has increased across the suburbs. Nonetheless, Wyly (1999) also finds that “the parameters of residential structure still mirror the sociodemographic distinctions first identified in the early-postwar metropolis” (p. 335). If

household size still tends to increase with distance from the city centre, the manner in which this pattern intersects with income levels may have changed with polarization.

With high levels of immigration in globalizing cities, the integration of newcomers into the metropolitan economy is tied up with income polarization. International research has shown that government policy can lead to polarization among immigrants, as professional and managerial workers may be courted for high-income positions, while low-skilled labourers are allowed short-term entrance for menial jobs (Hamnett, 1996, Tai, 2006, Chui and Lui, 2004). Ley and Smith (2000) point out that the newcomers to Canada are a heterogeneous group ranging from dispossessed refugees to entrepreneurs and investors who arrive with substantial resources. The linkages between immigration and polarization are complex. There are disparities within and between minority groups, and the labour market integration of newcomers is uneven (Walks and Bourne, 2006, Lo, 2008). Newcomers to Canada now enter a restructuring economy where there is rising labour demand for both those deemed to have low skill levels and for highly skilled professionals, managers and entrepreneurs (Hiebert, 1999). Even in a city with a long history of immigration, such as Toronto, the supports available to help in the settlement process have been limited by the neoliberal restructuring of the welfare state (Siemiatycki et al., 2003). For many newcomers, disadvantage is compounded by the stratification of the labour market based on place of birth, in which immigrant men and women are concentrated in the manufacturing sector, where jobs are declining (Preston and Cox, 1999). Moreover, lack of recognition for foreign credentials and experience, including post-secondary degrees and professional and managerial experience, inhibits economic integration in metropolitan areas where such skills and experience are increasingly important to labour market success, particularly in the most dynamic sectors (Baum, 1997, Picot, 2004, Reitz, 2001).

There is evidence that structural shifts are hindering the economic integration of newcomers. Although immigrant earnings rise with the length of time they have been in Canada, more recent cohorts of immigrants are starting from a position of lower earnings than previous cohorts. In their first ten years after arrival, immigrant men, aged 16 to 64, who arrived in Canada in the late 1980s and the 1990s earn less than those who arrived in the late 1970s or early 1980s, relative to the earnings of Canadian-born men (Schellenberg, 2004). Picot (2004) finds that although the earnings gap between recent immigrants and the Canadian

born declines with the number of years spent in Canada, the earnings of immigrant cohorts arriving since the seventies have not reached parity with the Canadian-born. He further notes that during the 1990s in Canada's major cities, rising low-income rates were concentrated among immigrants who had been in Canada for up to two decades. The low-income rate among recent immigrants tends to be higher than more established immigrants and persons who are Canadian citizens by birth (Picot and Hou, 2003). Nonetheless, the low-income rate among recent immigrants rose in Canadian cities during the eighties and nineties to nearly twice the overall rate in Canadian cities (35% vs. 17.7%) (Heisz and McLeod, 2004). The rising low-income rate among recent immigrants occurred across all age groups, family types, language groups and education levels (Picot and Hou, 2003). It may be difficult to measure the relationship between the integration of newcomers and polarization, as some are hindered and some are increasingly privileged in the restructuring metropolitan economy. Factors of immigrant status and the length of residence in Canada may have simultaneously positive and negative effects on income polarization.

The geography of immigrant settlement reflects polarization as much as it does the increased heterogeneity of newcomers. Prior to the political shifts and economic restructuring of the late twentieth century, there was a more or less consistent trajectory of settlement wherein newcomers were concentrated in the inner city, but tended to move to more suburban locations as they became more established (Burgess, 1925, Murdie, 1969, Troper, 2003). By the 1990s, the role of traditional immigrant neighbourhoods in the inner city as destinations for newcomers was declining. There has been a suburbanization of immigrant residences in Canadian cities due to both direct settlement upon arrival and to the movement of more established immigrants to the suburbs (Smith, 2004, Lo, 2008). Newcomers who are of limited means often reside in low-rent and social housing in the inner city and the post-war suburbs (Murdie, 1998). Housing built in the post-war era for moderate and middle income households appears to have become a source of affordable housing to recent immigrants. Those with more means may settle in more recently developed outer suburbs. However, residence in the outer suburbs does not necessarily imply greater personal or household solvency, as suburban immigrants are more likely to be at risk of homelessness than Canadian-born suburbanites, due to the high share of their income that goes to housing (Preston et al. 2009, Fiedler, Schuurman and Hyndman, 2006).

Ethnic enclaves, in which residents have a common culture, have long been of interest in research on immigrant settlement and metropolitan social structure. Enclaves offer a number of benefits to residents, including companionship among people who speak a similar language and share common interests and values, socialization of children in their heritage culture, and the potential for political solidarity on shared issues (Qadeer and Kumar, 2006). Enclaves also support the viability of ethnic stores, services and places of worship, and can make it easier to organize religious and cultural activities. Even in high-poverty immigrant enclaves, benefits such as these can give a sense of community and safety, although there are still the burdens of stigma and isolation that accompany life in a high poverty neighbourhood (Smith and Ley, 2008). However, not all immigrants settle in enclaves. Among the many ethnic groups recorded in the Canadian census, the majority of group members may not live in an enclave, and no one ethnic group may form the majority of enclave residents (Qadeer and Kumar, 2006). In culturally diverse, globalizing cities settlement trajectories have become highly varied. Nonetheless, spatial differentiation in the concentration of immigrant groups is addressed in studies of polarization, because immigration has become integral to the urban economy, and may play a role in polarization (Vattovaara and Kortteinen, 2003, van Kempen, 1994, Walks, 2001, Baum et al., 2006).

Multiple indicators of urban deprivation do not spatially overlap in Canadian cities as they do in many exceedingly disadvantaged American neighbourhoods, but there is a growing spatial correlation between immigrant concentrations and concentrated poverty (Ley and Smith, 2000, Smith, 2004). The converse of this, the formation of affluent immigrant enclaves, may be expected with polarization, but the evidence is more mixed. In part, this is because broad statistical groupings based on nation of origin or visible minority status often mask a great deal of heterogeneity, which makes associations between socioeconomic status and ethnocultural identity problematic (Mendez, 2008). Studies of ethnic enclaves in Canadian cities, in which immigrants and Canadian born residents reside, suggest that these seem to have varied levels of affluence. Suburban communities with above average incomes and high concentrations of ethnic groups, such as Chinese and South Asians, have been found in large globalizing cities, such as Toronto (Walks and Bourne, 2006, Qadeer and Kumar, 2006). In contrast, Myles and Hou (2004) find that residence in ethnic communities is more influenced by a shared native language and homeownership, rather than a common socioeconomic status.



Moreover, they speculate that strategies such as private financing from family members and co-ethnics, multiple family co-residence and renting rooms facilitate homeownership for community members who may have lower individual incomes. Ley (1999) draws attention to how the pooling of resources in large households helps to mitigate low personal incomes in many less affluent immigrant households. As settlement trajectories become increasingly varied, the location of spatial concentrations of recent and more established immigrants may affect the spatial outcomes of polarization.

Metropolitan social structure is complex and it is differentiated along more dimensions than are considered in this research, which limits the investigation to those aspects of social status that may affect income polarization will be investigated. Nonetheless, each of the factors that have been identified in the preceding paragraphs contributes to the socioeconomic advantage or disadvantage of urban residents within a polarizing metropolitan social structure. Socioeconomic advantage is tied to one's position in the new economy, which privileges those in professional and managerial occupations, and those who have attained a post-secondary education (Baum et al. 2002). Socioeconomic disadvantage may arise from unemployment, employment in low-level service occupations, or in sectors where employment has been declining in the post-Fordist period, such as manufacturing. Socioeconomic advantage or disadvantage can also arise from living arrangements, as when both members of a couple are well employed in the dynamic economic sectors, or when a single income must support household dependents. In addition, the skills, qualifications and resources that newcomers bring to Canada position them in the polarizing economy, but there are mitigating factors such as whether foreign qualifications are recognized by potential employers. The spatial aspect of socioeconomic difference has further implications. Social spatial inequities may lead to differences between neighbourhoods in such variables as the accessibility of an affordable and quality selection of goods and services, the quality of local public goods, the quality of local social networks in terms of such matters as access to information about employment and housing opportunities, and the presence or absence of neighbourhood stigma (van Kempen, 1994). While each factor that affects income polarization can be isolated for the purpose of analysis, taken together these factors affect the everyday lives of metropolitan residents in profound ways.

## **2.2 Global Integration and Neoliberal Policy Shifts: From Fordism to the After-Fordist Context for Polarization**

It is useful to posit a starting point that may provide a basis for comparison by which to understand the process of polarization. Any periodization of the history of capitalist growth is contingent, relative and open to debate (Jessop and Sum, 2006). For example, while there has been much focus on contemporary globalization, world economic integration may be traced back on one form or another to various points in history (Giullen, 2001, Norcliffe, 2001). Nonetheless, comparisons to the Fordist period can inform our understanding of metropolitan growth trajectories, because many of the precursors of current metropolitan development were established in the first few decades after WWII, while the current phase of global integration has had particular implications for cities. The geographic extent of Fordism could be considered to be global, with Europe and North America, and particularly the US, at the center of a global regime, surrounded by peripheral and semi-peripheral nations (Jessop and Sum, 2006). However, the variety of national development strategies in the early to mid twentieth century allows one to identify a particular Atlantic Fordism, regardless as to whether the development of other countries was Fordist or in fact fit some other model. Amin (1994) notes that a number of criticisms of Fordist vs. post-Fordist categorizations may be made. First, even during the 1950s and 1960s there were non-Fordist production processes, and non-Keynesian state policies that were still important to the economy. Second, there were also many different national variants of the ideal-type Fordism, modeled on the American macroeconomy of the 1960s. Finally, this approach rarefies the past, giving history a “logical coherence that it seldom possesses” (p.11). With these caveats in mind, the theoretical discourse of Fordism, and regulation in general, provides a basis for understanding urban development in the mid-twentieth century, from after the Second World War up to approximately the 1970s, and to describe the political and economic regime in which urbanization processes occurred (Amin, 1994, Harvey, 1985, Jessop and Sum, 2006, Elam, 1994).

During the Fordist period, there was a balance whereby increasing consumer affluence fed into increasing productivity, and visa versa, sustaining overall economic growth. Growing demand for outputs was facilitated by cultural norms, as well as rising household incomes, which were supported through collective bargaining over working conditions and wages. In the

private sector profitability was ensured by increasing economies of scale, and large, vertically integrated firms mass produced standardized goods. The expansion of firms as well as mergers and acquisitions lead to monopolistic competition. Within nationally oriented economies, government interventions that would support and normalize demand were perceived to be vital for sustained economic growth. Congruence between the nation state and the national economy enabled governments to manage economic growth and to pursue Keynesian policy goals of full employment. Government investment in infrastructure promoted growth, and the introduction of social welfare policies and programs normalized consumption to include those who were not economically productive (Jessop and Sum, 2006). Living standards improved across North America, as more and more people entered the middle class.

Canadian Fordism lasted from after WWII to mid 1970s (Rutherford, 1996, Jenson, 1989, Hayter and Barnes, 2001). Canada's mode of development during this time has been referred to by Jenson (1989, 1990) as "permeable Fordism", which was shaped by federalism, the inherently uneven nature of resource-based development, and continental economic integration. By the mid 1960s social policy expenditures had increased, and full employment policies effectively kept unemployment low, which strengthened the collective bargaining position of unions. In Canada, the share of family income going to the middle class increased in the 1960s and 1970s, and peaked in 1977 (McWatters and Beach, 1990). Although industrialization was not as fundamental to Canadian economic growth as was a deepening trading relationship with the US, domestic consumption was an important driver of national economic growth, which Jessop and Sum (2006) argues is a defining aspect of Fordist development.

Although, the nation-state was the primary scale at which Fordist relations were organized, the spatiality of capitalist development requires that it be normalized across scales (Jessop and Sum, 2006). Fordist urbanization was part of a state lead project of spatial Keynesianism wherein Fordist mass production and consumption was extended across space with the goal of stabilizing what was presumed to be endless national economic growth (Brenner, 2004, pp. 114-171). In the Canadian context, metropolitan governance structures contributed to Fordist-Keynesian redistribution. As capital was transferred from the metropolitan region to provincial governments and redistributed federally to have-not regions, metropolitan growth facilitated the national equalization programs that were fundamental to Canada's interventionist state

(Donald, 2002a, 2002b). Conversely, higher levels of government supported metropolitan growth by subsidizing suburban expansion and urban renewal. The federal government also indirectly financed metropolitan development through increasing funds to provinces, who often cited municipal need, and through cost sharing for social security programs (Friskens, 2007). In addition to these vertical or nested relations, metropolitan governments enabled the horizontal stabilization of growth through tax pooling and service equalization among local municipalities (Johnson, 2008). The tax dollars generated by burgeoning metropolitan economies further supported the Keynesian interventions and redistributive functions of governments at all scales.

The spatial patterns of Metropolitan Fordist development were characterized by suburbanization, which incorporated sites for production and consumption into the ever expanding city (Filion and Bunting, 2006, Harvey, 1985, Smith, 1982). Large scale government investments in public infrastructures facilitated suburban development, such as through building expressways and sewer mains. The increasing availability of serviced land prompted the movement of manufacturing from the inner city to the suburbs, and this was followed by residents and retail (Donald, 2002a). Suburban greenfields, rather than the already built up pre-Fordist city were a preferable location for private investment for a number of reasons: redevelopment is usually more costly than development, the growing supply of serviced land in the suburbs reduced land costs, and consumer preferences favoured suburban living. Firms took advantage of cheaper land and arterial access to build expansive, single-story facilities, relying on trucks for movement of inputs and outputs. For households, suburban living entailed the procurement of a range of products. Low suburban densities and the zoned separation of land uses resulted in an urban form that necessitated automobile use, while increased home ownership in the form of spacious single family houses fostered demand for consumer goods (Filion, 1996). The socio-cultural context of the time also contributed to these trends. Cultural norms supported consumer preferences for standardized, mass-produced commodities, suburban single family homes, and lifestyles based on the nuclear family (Jessop and Sum, 2006, Filion, 1996). Thus, suburban expansion was the spatial form of Fordist metropolitan economic growth, and this supported mass production and contributed to the adoption of middle class lifestyles and consumption practices.

As a means of market intervention at the local scale, urban planning was inline with the broader societal support for Keynesian government intervention (Hackworth, 2007). Planning

not only provided for the needs of industry, but also regulated and organized urban growth so as to support the increasing urban population (Harvey, 1985, Soja, 1980). Rapid increases in homeownership were facilitated by the design of suburban homes, which made them affordable to middle and moderate income households, during a period of declining income inequality (Baxandall and Ewen, 2000 as cited by Dwyer, 2007). Planned subdivisions included a mix of densities and tenures that made suburban residence feasible for households with moderate incomes (Filion, 1996). Planning interventions were a means of redistribution, such as with the development of parks, mass transit and public housing projects. While supporting metropolitan growth through suburbanization, urban planning also facilitated opportunities for suburban living for a range of households. When planning goals conflicted with those of private capital, planning was justified by the argument that without it, haphazard and sprawling development would hinder growth (Foglesong, 1986/2003). There was a widespread acceptance that urban planning by the public sector was required in order to do what the market alone could not: to provide public goods, to provide for the collective needs of workers, to construct and maintain infrastructure and amenities, and to coordinate land use to minimize externalities (Klosterman, 1985/2003, Foglesong, 1986/2003).

A discourse of rationality further justified planning interventions, which were made on behalf of an ostensibly unified public interest. In the rapid recovery and growth of the post-war era, faith in reason and scientific methods, born in the Enlightenment, was brought to bear on governance to the extent that politics was often treated as residual or as even fully dispensable (Friedmann, 1987, pp. 87-136). Planning problems were presumed to be technical problems. This approach to city building assumed that there was not necessary limit to city growth, that the preferred urban environment was to be determined by individual consumer choice, and that planning would facilitate this through better design (Bocking, 2006). Technocratic planning in the public interest was further justified on the basis that the middle class was becoming more populated at the time, and on the basis that planners were largely successful in harnessing economic growth to provide for the middle class (Beauregard, 1989/2003). The coherence of the discourse of rationality is remarkable given that actual rational comprehensive planning is fundamentally impossible (Lindblom, 1959/2003). Despite what planners had been claiming, their plans were neither rational nor comprehensive. As Lindblom (1959/2003) shows, resources are limited, time is constrained, reality is complex, and the selection of goals and

means inevitably comes down to a question of normative values. Examples of the limits of rational planning are not hard to come by. In Toronto, Vojnovic (2000) finds evidence that economic criteria were not used to guide the spending decisions for suburban roads; rather, decision making was highly politicized. The disproportionate largess of public linear infrastructure spending that was funnelled to the suburbs in the post-war area facilitated a much lower-density urban form than was required to accommodate single-family homes, of which there was a considerable stock existing in the inner city at higher densities.

As population and investment shifted towards the growing suburbs, spatial disparities grew between the suburbs and the inner city. This shift was embedded within a social, political and economic context, in which suburban development was favoured and suburban living was becoming accessible to more and more people. Although the residential design and tenure mix of burgeoning suburbia created housing opportunities for middle to moderate income households, low-income households became spatially concentrated in the inner city. Much of the inner city housing stock declined in quality and value over time, and became a source of affordable housing for low-income households, as well as the sites of publicly lead urban renewal projects (Filion and Bunting, 2006). In Canadian cities, two trends countered inner city decline. Although decentralization of the population was the predominant trend, a counter trend began where some middle class households, most of whose peers choose to live in the suburbs, eschewed suburban living in favour of downtown neighbourhoods, where they sought to pursue urbane lifestyles (Ley, 1996). The physical attributes of the inner city, such as neighbourhood parks, local amenities and proximity to places of employment were attractive to these households. Rising suburban home prices and the relatively low cost of housing in the inner city were another impetuous (Sewell, 1993, p. 175). Moreover, immigrant settlement patterns helped to counter inner city decline, which never reached the level that it did in many American cities (Troper, 2003, Filion and Bunting, 2006). Immigrants actively maintained their homes and businesses, usually without bank financing or government subsidies. Many households took in boarders in order to finance homeownership, a practice which also provided affordable rental accommodation (Murdie and Teixeira, 2003). Ethnic enclaves were a reflection of the social exclusion experienced by minorities, but were also institutionally complete communities that were critical to the integration of newcomers into Canadian life. Despite these trends, and the persistence in Canadian cities some elite inner-city residential

areas (Broadway, 1995), the inner city became the locus of poverty and deprivation (Broadway, 1989, Madden, 1996).

However, starting in the late sixties and into the seventies, the relatively stable and sustained economic growth of the post-war period was derailed as profits declined and growth slumped, while both inflation and unemployment rose rapidly (Harvey, 1990, p. 141-172). The federal government was poorly positioned to manage Canada's staples-based, export-oriented economy in the midst of a global economic crisis (Wolfe, 1984). Inflation was exacerbated by a bubble in commodity prices in general and particularly by hikes in oil prices. Productivity declined as wages continued to rise, curbing profits. The decade of the 1970s marked the transition away from nationally integrated Keynesian policies. Jenson (1989) argues that the crisis of Fordism ultimately led to a greater decentralization of federalism, which created space for the provinces to "undermine universal social programs and to renege on collective bargaining rights" (p. 89). Perhaps indicative of the demise of the Fordist nation-building project, the Ministry of State for Urban Affairs, was both established and disbanded in the seventies by the federal government after a short and ineffectual attempt to coordinate urban policies (Wolfe, 2003). Boyer (1988) identifies the four aspects of Fordism that led to its crisis:

- 1) The increasing economies of scale and division of labour within firms became counter productive;
- 2) The expansion of mass production in pursuit of economies of scale led to increased globalization of production and international competition for domestic markets;
- 3) As the welfare apparatus of government grew, public investment in collective consumption became increasingly expensive;
- 4) Consumer preferences diversified and demand for standardized, mass produced goods declined (as cited in Elam, 1994, p. 64).

These tendencies produced economic and social turbulence, which the levers of Keynesianism seemed inadequate to correct.

At the urban scale, the limits to the Fordist city-building project were asserting themselves as vociferous local opposition to development. Even as the new suburbs were built,

communities were established that opposed further rounds of urbanization (Harvey, 1985). Those who had purchased into suburban lifestyles on the fringes of the city increasingly rallied against the paving over of bucolic environs. Those whose homes were cleared to make way for urban renewal decried the destruction of their communities. In Canadian cities, even as the rate of suburban development accelerated, a relatively small, but growing segment of the middle class who resided in the inner city became part of the vocal opposition to the modernist redevelopment schemes, such as when neighbourhoods were cleared to make way for expressways that primarily benefited suburban commuters (Ley, 1996). Moreover, as diverse identities became increasingly legitimized and social norms shifted, it has become difficult for planners to define a uniform public interest with which to justify expert-lead, rational planning.

The nature of the times since the breakdown of the Fordist regime is still uncertain (Jessop and Sum, 2006). As such, it may be more useful to interpret post-Fordist conditions not as a coherent model of development, but as the confluence of contemporary trends, which are contingent, contestable and not necessarily leading towards inevitable outcomes. In the last decades of the twentieth century, a qualitative change began in which political, economic and social activities have been re-organized in space in a manner that contrasts with the Fordist regime. It remains very difficult to assess what the nature of the post-Fordist or after-Fordist regime is (Amin, 1994). However, it has been argued that although the nation is still important, it is no longer the primary scale around which economic and political strategies are organized, and there is now a lack of congruence and co-ordination among strategies at different scales, which has led to increased volatility (Jessop and Sum, 2006, Peck and Tickell, 1994, Swyngedouw, 2004). Despite the open-ended nature of the concept of post-Fordism, which could allude to all aspects that came after, arose from, or replaced Fordism, it is clear that the linkage between economic growth and rising middle class affluence has weakened. Metropolitan social polarization has become a defining aspect of cities as the twentieth century has drawn to a close and the twenty-first century begins, and it has risen in buoyant economic conditions (Sassen, 2001, Storper and Scott, 2009).

Plausible interpretations for the changes in metropolitan economies focus on flexibility in production processes, the agglomeration of firms in cities, and the fragmentation of labour markets. Beginning in the 1970s, mass production was diminishing as a driver of metropolitan



growth (Storper and Scott, 2009). New drivers of growth ascended in sectors that combined digital technologies in production and communication with a plethora of new skills to generate diversified outputs in technology-intensive, rather than labour-intensive industries. It has been suggested that production in the manufacturing and knowledge-based sectors have become more flexible in terms of small-batch, short-run production of specialised outputs, a vertical disintegration of firms and a thickening of networks between subcontractors, often dispersed internationally (Amin, 1994, Harvey 1985, 1990). Though manufacturing is still vital to metropolitan economies, particularly in high-technology industries, economic growth is now driven by the dynamism of the service sector, especially higher-order services (Polèse and Shearmur, 2006, Coffey, 1994). Metropolitan areas that are centers for these sectors thrive, while centers of Fordist industry grow more slowly or suffer from stagnation. Pervasive changes in labour markets have accompanied this restructuring. In Amin's (1994) review of the regulation school, he notes that the combination of Fordist rigidity or Post-Fordist flexibility in the organization of work depends on the sector or national context, but there is a "new, and perhaps permanent, drive for flexibility and efficiency based on acute labour market fragmentation," the outcome of which may be conceptualized as "labour dualism" (Amin, 1994 p. 23). Harvey (1990) offers a typology of the post-Fordist labour force, at the heart of which is a group of core workers that hold full-time, permanent positions, with good job security and benefits, and who are "central to the long term functioning of the firm" (p. 150). In contrast, a peripheral group of workers includes part-timers, casuals, temporary workers and contract workers in addition to full-time workers with lower skill levels, fewer career opportunities and higher turnover rates. Even as demand has grown for managerial and professional workers, an increase in contract work for highly skilled employees has led to an increase in the risk of unemployment across the occupational structure, while the job tenure of low-skilled labour is particularly precarious.

The global cities literature offers an alternative explanation for metropolitan disparities, by focusing on the embedding of metropolitan economies within an increasingly interconnected world economy. The intense global economic integration that has taken off in the past few decades is primarily organized within extensive, complex, transnational production networks that are lead by transnational corporations with strategic alliances and linkages (Dicken, 2004, Knox, 1995). It is argued that as economic activities have become internationally dispersed,

there is a heightened need to integrate global operations (Sassen, 2001, 2005). The ascendance of large international firms has occurred alongside the proliferation of smaller, specialised suppliers, forming complex business networks, and allowing firms to deliver customised products to diverse clients in far-reaching locations. Working under fast-paced, complex and uncertain conditions, firms benefit from being situated within easy access to information and a mix of talents and business networks. In high-technology and high-level business and financial services, mutual proximity in an urban context provides a number of benefits that enhance global competitiveness, such as reduced transaction costs, access to timely information and varied opportunities, and encounters where novel and useful insights may be generated (Scott, Agnew, Soja, & Storper, 2001). The impact on the urban occupational structure is the simultaneous increase in demand for highly skilled and low-skilled labour, while the demand for semi-skilled labour, such as that employed in Fordist-type industries, declines.

Although the global cities literature is perhaps more explicitly urban, the importance of agglomeration or clustering effects in both theoretical discourses implies that both have distinctly urban implications. One limitation of global, or globalizing, cities theory is that it is primarily focused on producer and consumer services (Sassen, 2001). In contrast, labour market fragmentation may describe changes across economic sectors. Nonetheless, by noting changes in the demand for consumer services, the global cities theory makes room for consideration of the impact of this demand on the urban landscape. Cities provide the amenities and context that are attractive to growing numbers of high-income managers and professionals who are engaged in the conspicuous “consumption of style” (Sassen, 2001, p.323). Another key difference is that while the economic changes that are the focus of flexibility theory do not depend on the global connectivity of a given sector, the global cities literature focuses on the embedding of a distinct global subsector within metropolitan economies where most activities may be nationally or locally oriented. That social-spatial polarization trends have been shown to be occurring in a range of cities, not all of which are global cities, would suggest that other factors are at play (MacLachlan and Sawada, 1997). One reason for this could be that a common tendency towards polarization may be found in all cities that are impacted by globalization processes, of which the shifting location of production networks is perhaps the most influential, although the nature and extent of this impact in each city is highly contingent on a variety of historical and political factors (Marcuse and van

Kempen, 2000). Burgers (1996) and Burgers and Musterd (2002) put forth a layered model for analysing the local impacts of broader economic restructuring in different cities. The highest layer is the global shifts in economic activity and an emerging international division of labour. The second layer is the institutional context of a city. Mediating institutional factors in terms of policy at various levels of government will shape the form of polarisation in a given city. Historical differences within particular cities, such as a city's past significance as a financial or industrial center, will further effect how broader processes are manifest.

Contemporary complexity is compounded as social and demographic factors intersect with labour market restructuring to shape urban change in unprecedented ways. Increased labour market participation of women is not clearly related to global economic integration or to flexible production, although this has occurred in many metropolitan labour markets worldwide. Acceptance of a greater range of lifestyle choices and trajectories, beyond the formation of the heterosexual nuclear family, has also influenced household formation and impacted metropolitan polarization (Bourne and Rose, 2001). Canada has become more culturally diverse than in the post-war period, as immigration has become a significant component of metropolitan population growth (Ley and Hiebert, 2001). While high levels of immigration are a characteristic of global or globalizing cities (Sassen, 2001), the economic integration of newcomers is affected by a number of factors such as national entrance policies, local settlement programs, and the history of a city as an immigrant destination (Ley and Smith, 2000, Siemiatycki et al., 2003).

The political and policy shifts that have accompanied economic, demographic and cultural change may be understood as a shift away from state-lead Keynesian managerialism to market-lead neoliberalism. The Keynesian assumption that government intervention was necessary to support demand in order to sustain economic growth was called into question when the Fordist balance was upset, and the governments of western industrialized nations faced growing budget deficits at the same time that higher structural unemployment increased social security claims (Musterd and Ostendorf, 1998). Over the subsequent decades, the Keynesian welfare state came to be perceived as an impediment to economic growth, social security programs were reformed, and neoliberal policies were adopted. Hackworth and Moriah (2006) argue that the varied forms of neoliberal strategies are guided by a core set of ideological axioms that have greatly influence reform at all levels of government:

- 1) The individual as the normative center of society;
- 2) The market as the most efficient and effective means of dispersing and reproducing this autonomy; and
- 3) The interventionist state as the chief impediment to both market and individual autonomy. (Hackworth and Moriah, 2006, p.523)

However, how these tenants are translated in to actually policies and strategies are highly dependent on the local economic, cultural, and political history of a place, and neo-liberal governance evolves and adapts over time as conditions change (Wilson, 2004). There is always a tension between ideal-type neoliberalism and its contingent practices.

There is a hypothesis in the literature that increased competition due to globalization leads to the adoption of neoliberal policies, but an alternative conception is that state intervention is a much more independent factor (Musterd and Ostendorf, 1998). It is possible to imagine and remember other forms of world economic integration and neoliberal globalization is just one possible form (Guillén, 2001). In a recent review of the literature, Brady, Beckfield and Zhao (2007) find an emerging consensus that economic globalization has small effects on welfare state expenditures, if any, but that the impact may be better understood as “a socially constructed discursive device that legitimates calls for efficiency and undermines calls for egalitarianism” (p. 319). In many situations, the perception of heightened capital mobility may be as compelling as the material reality. Yeung (2002 ) distinguishes between the “spatial metaphor” of globalization, which is often posited as a causal explanation or an omnipresent force by actors across the political spectrum, and the sundry material tendencies of economic integration, such as those described in global cities theory. Discourses on the virtues of growth via globalization and flexibility have superseded old discourses on the virtues of modernist development, giving rise to new policy approaches that diverge from Keynesianism (Moulaert, Swyngedouw and Rodriguez, 2001).

Hamnett (1996) draws attention to the role of welfare policy in polarization processes. Public welfare supports vary among jurisdictions, and this leads to variations in social polarization. Where the welfare state is more limited, there are increases in low-paid, low-skilled employment. However, government provision of social benefits allows some people who might otherwise be employed in low-wage jobs to live outside of the labour force. Under

such conditions, disparities may increase between those that are employed in an upgrading economy and those that are excluded from the formal labour force, leading to polarization in incomes. A central point is that global trends in economic restructuring are mediated by public policy at various levels of government. The social welfare policies of government influence how polarization is manifested by affecting the circumstances of those at the bottom of the income distribution, and by making economic well-being less precarious to all workers who are vulnerable to cyclical changes in unemployment.

Peck, Theodore and Brenner (2009) argue that the devolution of risk and responsibility to the local level is a common neoliberal strategy. Efforts by senior levels of government to reduce deficits in the mid to late 1990s lead to cutbacks in unemployment insurance and social assistance, a tightening of eligibility requirements, and the transfer of responsibility for many social welfare functions and collective goods to municipalities without the funding or means of raising funds to meet the growing demand for services (Donald, 2002B, Clarkson, 2001, Kipfer and Keil, 2002). This has presented particular challenges for Canadian municipalities, whose powers are mandated by the provinces. The metropolitan or regional scale has become more important to stabilizing growth, and while national governments continue to play a vital role, local governments are now engaged in global competition to attract investment (Clarkson, 2001). The shift from Keynesian managerialism toward neoliberalism at the local level entails a new conception of good governance that is no longer based on regulation and redistribution, but on the “ability of formal government to assist, collaborate with, or function like the corporate community” (Hackworth, 2007, p.10-11). There is tendency to focus public resources on particular forms of development, which often have a significance that is incongruent with the territory of the metropolitan region, and which have only an indirect connection to metropolitan-wide conditions and inequities (Harvey, 1989). In what Harvey (1989) calls the new urban entrepreneurialism, public-private-partnerships are a common vehicle for projects that increasingly emphasize consumer attractions, entertainment, and cultural innovation as part of the physical rebuilding of areas that have been identified as under-utilized. This strategy not only contributes to an image of the city that is attractive to potential investors, it also fosters a sense of belonging to the extent that socioeconomically and culturally diverse urban residents can take part in the spectacle of consumption.

Inner city redevelopment has become a means for cities around the world to attract a greater share of increasingly global production and investment (Smith, 2002). The increased public and private capital that is now being invested in inner city redevelopment distinguishes it from “sweat equity” gentrification, which was primarily lead by middle class homeowners via renovation and the deconversion of housing from rental tenure (Hackworth and Smith, 2001, Smith, 2002). Reconfiguration of the built form in key locations is part of an economic development strategy that is in accordance with both public and private sector objectives. Common examples are urban mega-projects on the scale of Battery Park in New York or Canary Warf in London that are often facilitated by public involvement, and that completely remake large areas of the inner city into exclusive live and work zones for highly compensated workers (Sassen, 2001, Marcuse and van Kempen, 2000). Another example would be where the planning policy framework supports reinvestment, such as with the development of condominiums, which contribute to achieving municipal residential intensification goals (Kern, 2007). In contrast to the urban renewal programs of the post-war period that depended entirely on public financing, public funds are now used to leverage private development of multi-use and highly symbolic projects with the aims of revaluing urban land, increasing local government revenue, producing profitable economic activities, and re-enforcing the competitive position of metropolitan areas (Smith, 2002, Swyngedouw, Moulaert and Rodriguez, 2002).

Such projects are within the professional purview of urban planners, who now face double challenges of promoting the public interest as urban populations become increasingly diverse, and of fostering growth with reduced public funds. The legitimization of a variety of lifestyles, cultures, and living arrangements in cities challenge the pretence that there is a unified public to plan *for*. With this has come a new normative dimension to planning, whereby planners seek to foster an inclusive diversity. Sandercock (1998/2003) posits that that while the modernist planning of the past “was, in part, dedicated to the eradication of difference”, a new planning paradigm is rising that is “dedicated to a social project in which difference can flourish” (p. 401). For diversity to flourish, and this may include ethnic as well as gender, age, ability and sexual diversity among others, the meaning of the city needs to be re-examined. New procedural approaches have been developed such as communicative planning (Healy, 1992/2003), pluralistic planning (Qadeer, 1997), and communicative action planning (Innis,

1995). The role of the urban planner has changed from technocrat to negotiator and consensus-builder, mediating between competing interests and soliciting community participation. However, as capital has become more mobile in a globalized economy, municipal governments and planners have reduced leverage when bargaining with corporate actors (Young, 1990/2003, Beauregard, 1989/2003). Cities not only compete with each other as locations for corporate activities, they depend on this direct investment for tax revenue and jobs. Under conditions of fiscal constraints and the widespread acceptance of neoliberalism, it is increasingly difficult to manage urban development for the benefit of the public at large, while facilitating projects deemed critical to economic growth.

### **2.3 Contemporary Urbanization Dynamics**

Urbanization dynamics may shape the spatial outcomes of polarization, in ways that continue or depart from the spatial disparities of the Fordist regime. Urban space is a product of social relations, and once established influences social relations (Soja, 1980). At the metropolitan scale occupational restructuring, the fragmentation of labour markets, cultural and demographic change, and neoliberal policy shifts are mediated by the historical and institutional context of a given city, so that multiple and contingent social factors affect polarization outcomes. How these outcomes are manifested in urban space and spatial relations is further influenced by the built environment. From the multiplicity of spatial forms and tendencies that have come to characterise North American metropolitan areas it is possible to identify two major shifts. First, suburban development has not so much continued as it has come to be the dominate mode of growth in city regions, and second, recentralization and gentrification counter inner city decline in many cities. This section will explore urbanization processes and how these have been theoretically linked with changes in metropolitan social structure in the literature.

In many cities that are business and financial centers, increasing employment and population along with redevelopment all contribute to inner city resurgence (Cheshire, 2006, Fishman, 2005). The decline of inner city manufacturing contributed to a range of social disadvantages, but it also created opportunities for re-investment as sites became available for redevelopment (Broadway, 1995, Williams and Smith, 1986). The proliferation and

concentration of business and financial services and the presence of public institutions in the inner city has attracted highly educated managers and professionals to centrally located residences (Storper and Scott, 2009, Williams and Smith, 1986). Gentrification entails renovation and redevelopment, and tends to lead to a greater presence of smaller households, and residents with higher levels of education, and professional or managerial occupations in neighbourhoods that once housed moderate to low income, working class residents (Ley, 1996, Melingrana and Skaburskis, 2005). Inner city revival has also been linked to the valorization of urbane lifestyles (Ley, 1996, 2003 Zurkin, 1998). The consumption habits of the professionals and managers who work, shop, and increasingly live in the inner city, have had an impact on the landscape, due to their high effective demand. The presence of the “new middle class” in cities creates demand for a range of consumption activities and cultural amenities from housing to shopping, restaurants and galleries, thus prompting further redevelopment. Small scale gentrification, nascent in the 1960s, has continued and given way to new forms of gentrification that involve extensive investment in condominium development, infill and brownfield redevelopment (Filion and Bunting, 2006).

Although the consumption habits of the professionals and managerial workers who live and shop in the inner city are linked with gentrification, differences in consumption are not as thoroughly addressed in the polarization literature as income differences. Thus, it is unclear what the affect of income polarization would be on this aspect of gentrification. The fragmentation of labour markets, with increases in part-time, casual, temporary or contract positions, many of which require lower skill levels, offer fewer career opportunities and have higher turnover rates affects the consumption capacity of many urbanites, including gentrifiers (Amin, 1994, Jessop and Sum, 2006, Harvey, 1990). More precariously employed professionals also play a role in gentrification, though their income levels may not be rising with polarization and their capacity for consumption may be more limited than the corporate elite (Rose, 1984). Nonetheless, as gentrification proceeds, there is evidence that lower income residents, are steadily priced out of central areas (Lees, 2008, Walks and Maaranen, 2008, Freeman, 2005, Slater, 2004). The large scale redevelopment of neighbourhoods that housed low-income residents in the Fordist period contributes to changing patterns of metropolitan wide spatial polarization.



Suburbanization is still a major trend in metropolitan development. The outward expansion of cities has continued apace, bursting forth from the rigidities of state-managed post-war urban growth and incorporating vast areas into the metropolitan realm. The largest metropolitan areas are amorphous urban regions, structured by interstate highways, where the continued decentralization of population and employment has led to increases in suburb-to-suburb and suburb-to-exurb commuter flows, the clustering of employment uses in commercial districts and planned suburban downtowns, and a blurring of the boundaries between the city, the suburbs and the exurbs (Bourne, 1996, Lang and Knox, 2009). In many ways, the first wave of car-oriented suburbs built after WWII could be considered the precedent for contemporary urban form in the outer areas of the city (Bourne, 1996). The elements of suburban development still incorporate decentralization from the historic urban core, and the separation of land-use activities at low densities, while consumer preferences for single family homes in low-density, nature-like places continue to perpetuate demand for dispersed suburban form (Bunting and Filion, 1999). Residential population densities are higher in newer suburbs than in older ones, featuring the larger homes on smaller lots, although the new higher-density subdivisions are still built within urban areas that have low gross population densities (Lang, Blakely and Gough, 2005, Filion and Bunting, 2006). The suburban environment was and continues to be suited to high rates of automobile use, incorporating abundant free parking and ready access to multi-lane arterials and expressways.

Yet, as the suburban form is manifested on an even greater scale, the suburbs now exhibit new qualities in their social make-up and built environment. Ethnic diversity has increased in the suburbs, as has the variety of household types (Lange, Blakely, Gough, 2005, Frey and Berube, 2002). However, as the outer areas of the city have become more socially diverse, many suburbs have also become more exclusionary (Bourne, 1996). There are fewer rental units in the suburbs that were constructed after the mid-seventies, when the investment climate became unfavourable to the production of rental housing (Bunting, Walks, Filion, 2004, Lampert, 1995). Starting in the eighties, new suburban homes were increasingly geared toward higher-income purchasers, with large floor areas, extra bedrooms and bathrooms, and lavish design features (Dwyer, 2007, 2008). Suburban residential development is increasingly contributing the spatial separation of affluent households within metropolitan areas (*ibid.*). Common interest developments, including gated communities, which shift responsibility for

the provision of infrastructure and amenities from local governments to community members, are increasing in number (Grant, 2005, Townshend, 2006). The narrow price ranges for housing in these developments contributes to a degree of socioeconomic homogeneity among the residents, and they are often marketed to affluent homeowners. In practice, if not in intent, such developments fail to accommodate increasingly diverse metropolitan populations, and privatize the public realm (Grant, 2007).

At the same time there are also signs of decline and impoverishment in those suburbs built in the 1950s and 1960s that were initially home to a growing middle class (Cooke and Marchant, 2006, Lee and Green Leigh, 2007). In the literature on suburban poverty, it is often concluded that the concentration of disadvantaged households in inner ring suburbs may be explained by the availability of inexpensive, technologically obsolete housing, and the outer suburban location of affluent households may be explained by the willingness to trade off commuting times for more spacious homes with state-of-the-art amenities (Madden, 2003). While such tendencies may still play a role in local land markets, this explanation does not account for the concentration of poverty in more recently constructed suburbs (Holliday and Dwyer, 2009). It also does not account for the persistence of old, elite suburbs or of moderate-income suburbs in the inner ring (Hanlon, 2009). Nonetheless, the socioeconomic decline that has occurred in many older suburbs further distinguishes them from those suburbs built at the turn of the twenty-first century.

It is now possible to identify different areas of the city based on the urbanization dynamics that were dominant at the time that each was built. These urban zones may be defined as the inner or inner city, the post-war suburbs, and the outer suburbs and urban fringe. The built form of the inner city is relatively dense with a mix land uses in close proximity to each other in manner that facilitates walking and the use of public transport (Filion and Bunting, 2006). There is vibrant heterogeneity to the built environment of the inner city, which juxtaposes shops, residences, parks and heritage buildings. This part of the city was built before Fordist institutions were effectively influencing metropolitan form. Although largely developed prior to the advent of modern city planning, contemporary planning strategies now connect with gentrification trends to actively promote the redevelopment of the inner city. The post-war suburbs were built during Fordism, when government investment in public infrastructure, including and equitable distribution of assisted housing, and public amenities such as parks

were central to metropolitan physical expansion and economic growth. During this time, urban development took on a dispersed form, and middle class lifestyles became increasingly viable for many. The Fordist suburbs consist of largely private homes situated within an automobile-oriented built form, but their development was guided by comprehensive plans for both private vehicles and public transit, and a mix of housing types, including both rental and ownership tenures. Much of the housing in the post-war suburbs was designed to be affordable to households with moderate to middle incomes. Like the post-war suburbs, the suburbs built after Fordism have a dispersed urban, but they are more privately oriented with common interest communities, highly localized boutique infrastructure and amenity bundles, and a continued, and perhaps heightened, reliance on the private vehicles for transportation. The housing in these newer suburbs tends to be larger than in the post-war period and has embellished design features that cater to the high end of the ownership market. It is now possible to identify different areas of the city based on the urbanization dynamics that were dominant at the time that each was built. Changes in urbanization dynamics have led to differentiation in the built environment, including variations in housing stock, across the inner city, the post-war suburbs, and the outer suburbs. These changes may be reflected in metropolitan social structure, just as the spatial articulation of polarization may be mediated by urban form (Walks, 2001, Soja, 1980).

## **2.4 Understanding the City**

Almost a century has passed since the research of what became known as the Chicago School was originally done, and it remains influential. The importance of investigating polarization and urbanization trends at the metropolitan scale can be better understood by positioning questions of metropolitan polarization within our changing understanding of the city, and it is with the Chicago School that this quest for understanding began. It may be that the questions that were first posed by researchers at the University of Chicago about the fundamental nature of cities “are perennial empirical questions” (Abbott, 2002). A renewed Chicago School style of inquiry still focuses on social organization and social systems, context and neighborhood change, but it now considers the larger political economy in studying the processes and dynamics that shape community life (Sampson, 2002). In order to understand

contemporary social-spatial change, it is fruitful to look back at the contributions and limitations of this pioneering school of urban research. Attempts to make sense of rapid urban industrialization started with the question of how societal change would be reflected in spatial residential differentiation. It was believed that the knowledge gained from this research project could inform early social and urban planning interventions to ameliorate poverty, disease and blight (Abu-Lughod, 1991). This quest for practical understanding took the form of a search for explanatory principals (Davies and Murdie, 1993). Walton (1993) describes the collective oeuvre of the Chicago School as constituting a social organizational paradigm that was “founded on the concepts of community organization and disorganization, ecological succession, and market-regulated social differentiation” (p.301). Early work saw social processes as natural ones. The city was viewed as an organism that functioned according to predictable laws. The social structure of the city was comprised of neighborhood-based communities characterized by propinquity in space as well as social relations. Social disparities were understood to be a natural outcome of the functioning of urban industrial cities. As the research project progressed, biological metaphors were superseded by classical economic explanations. Residential differentiation was shown to arise from the functioning of land markets, and was seen as the outcome of consumer preference, household purchasing power, perceived opportunity structure, and household mobility (Berry, 1971, Janson, 1971, Rees, 1971). Empirical studies sought to inductively determine how the spatial arrangements of urban settlements arose from social organization. Social relations were largely defined in terms market-based transactions and the position of actors in the labour market of the industrial city. The accuracy of such explanations in accounting for an exceedingly complex urban reality continues to be debated (Dear, Burridge, Marolt, Peters and Seymour, 2008). Nonetheless, the school’s focus on social processes, spatial and temporal context, and empirical study is a legacy that continues to stimulate further research (Abbott, 2002). At least in part, this sustained interest is due to deep societal shifts, the impact of which on cities we do not understand yet.

In the early 20<sup>th</sup> century, three competing theories of residential structure were formulated: Burgess’s concentric zones, Hoyte’s sectors and Harris and Ullman’s multiple nuclei. From surveys of Chicago, Burgess (1925) derived the concentric zone model of urban expansion, while attempting to account for the production of slums and urban pathologies. He

divided the city into zones that radiate out from the central business district. In the model, processes of invasion and succession lead to a relatively homogenous social make-up in each concentric zone, as households move outward from the inner city towards more desirable neighbourhoods. The central business district is surrounded by a zone of transition where poor and childless households find affordable housing. Landlords in the zone of transition neglect to maintain their dilapidated buildings, because they will soon be able to redevelop them as the central business district expands to incorporate more land. Further out from the city centre there is a zone of working-class households, and then middle class and commuter suburbs. An alternative model was put forth by Hoyte (1939). Based on rent data compiled from over a hundred American cities, Hoyte connected urban social structure with real estate dynamics. He posited that households move progressively outward towards the periphery of the city as their incomes increase and they can afford better-quality housing, while lower-income households occupy the older housing closer to the city centre. Hoyte's model accounted for the appearance of areal sectors, which are maintained as housing is constructed at the edges of the city. As the city expands, sectors with higher rents, and higher income inhabitants, develop along high ground above flood lines, but in reach of natural amenities such as rivers and lakefronts and with easy access to key transportation routes. Low-rent sectors with lower income inhabitants develop along transportation corridors and near to industrial districts. Harris and Ullman (1945) built on the work of both Burgess and Hoyte by proposing that while the social structure of the city is organized around a dominant central business district, it develops around several discrete quarters such as peripheral industrial districts, universities and suburban commercial agglomerations. In this model, residential districts are spatially defined by land value patterns, the quality of housing and nearby land uses. For example, low status districts are associated with dilapidated housing, railroads and industrial uses, and the segregated neighbourhoods of ethnic minorities are particularly clustered.

Starting from the premise that the structural changes that brought about modern industrial society would be reflected in the social structure of the city, Shevky and Williams (1949) and Shevky and Bell (1955) formulated a methodology for delineating urban social space that would ultimately integrate antecedent theories. Three dimensions of social spatial variation were identified: social rank, urbanization and segregation. Social rank was meant to reflect the redistribution of skills, which accompanied the changes in social and economic relations that

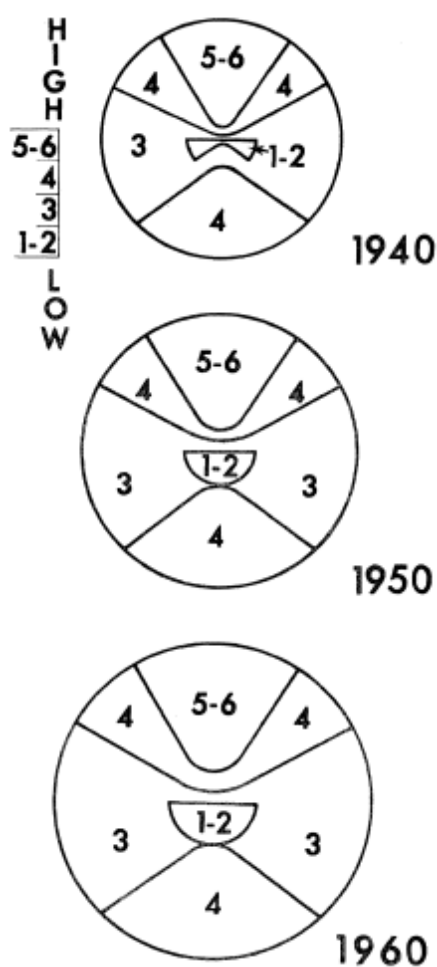
were characteristic of the rise of modern industrial society. This was captured in measures of socioeconomic status. Urbanization was meant to reflect the declining importance of the household as a production centre, as economic and kinship functions diverged in an urban, rather than agrarian economy. Measurement was meant to capture variations in the function and structure of the family. The third dimension, segregation, was intended to reflect the high degree of complexity, mobility and diversity in modern cities. The isolation of groups with similar ethnicities was measured. Social area analysis laid the foundations for the numerous factorial ecologies that followed. Advances in computing power in the sixties and seventies allowed urban researchers to start with a plethora of social variables and then apply sophisticated statistical techniques to identify dimensions of spatial variation. As factorial ecologies were done for numerous western cities, the spatial models proposed by the Chicago School were found to compliment each other: socioeconomic status follows sectors, family status changes with distance from core, and ethnic enclaves show a nucleic pattern (Murdie, 1969, Berry, 1965, Berry, 1971).

However, although socioeconomic status was organized in sectors, income was shown to rise with distance from the inner city. Salins (1971) explains how the income gradient can be explained by theoretical links between the empirically independent dimensions of socioeconomic status, family status and ethnicity. According to ecological models, singles live and work in the downtown. With family formation, which was posited as marriage and childbirth, households are increasingly willing to trade off proximity to downtown jobs for newer, more spacious housing. This is made possible primarily by the income of the household breadwinner, which rises with job seniority, but also by an increased likelihood of other family members working over time. This linkage holds across occupational categories and levels of educational attainment, so that the process occurs simultaneously across sectors of varying socioeconomic status. Salins observes that as the city grows the boundaries of the sectors remain relatively stable, which he interprets as reflecting “consistency in the relative proportion of families in each social rank class” (p. 243). The clustering of ethnic groups counters this pattern to some extent, but the changes in the locations of the ethnic clusters with respect to social status sectors over time was taken to indicate that most groups have some degree of social mobility. Such an interpretation was consistent with the spatial assimilation model, whereby attitudes and behaviours of immigrants would become more similar to native

born residents over time, and that this would be associated with movement from inner city enclaves to the relatively affluent suburbs (Mendez, 2008). Nevertheless, Salins shows that this trajectory of upward mobility was not shared by all residents. He delineates a “lower class zone” in the inner city, where due to limited household means or racial discrimination, residents with the least choice are concentrated close to industry and other noxious land uses. Figure 2.1 from Salins’s study presents an idealized model of how the area occupied by residents with the lowest “social rank” did not form an elongated sector, but remained in the inner city during the nineteen forties and fifties. Residents of this zone were excluded from the housing markets that produced sectors throughout the rest of the metropolis.

Alonso (1964) and Muth (1969) explicitly connect the spatial distribution of income and the functioning of the housing market. With the assumptions that there are no pre-existing land uses or irregularities in terrain, that employment is concentrated in the city centre, and that transportation is unencumbered throughout the city, the inner city is the most accessible location in the metropolis, and therefore has the highest land values. Development in the city center reaches higher densities to accommodate the higher cost of land. Household affluence increases with distance from the inner city, as households trade-off longer commuting times for newer, more spacious housing in decentralized locations. Lower-income households tend to reside closer to the city centre due the lower cost of residence in higher density housing, and

Figure 2.1 Salins’s Ecological Model of Social Rank



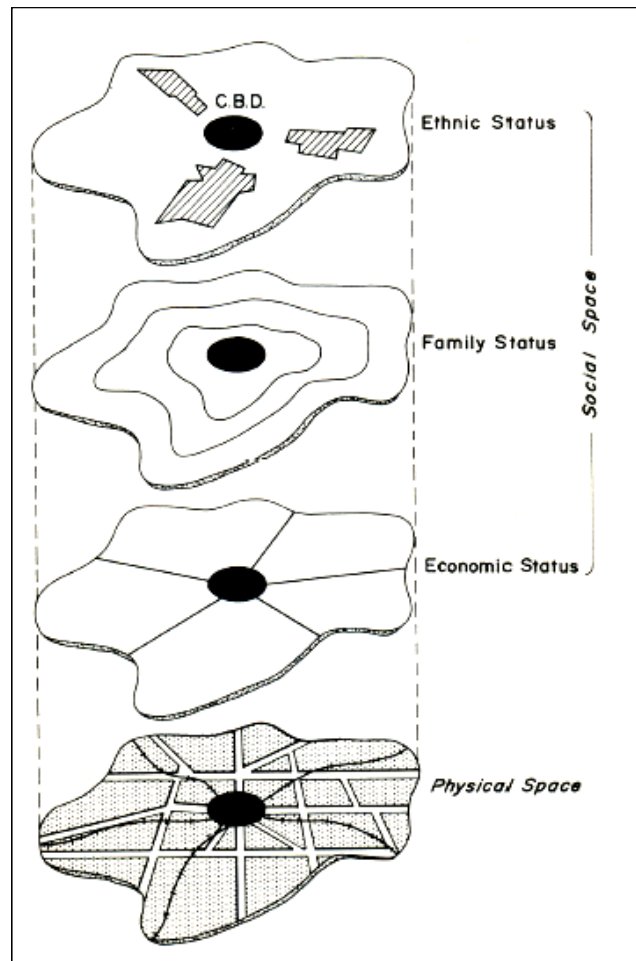
Source: Salins (1971, p. 243, Fig. 2.5)

the reduced cost of commuting in the central location. Thus, the income gradient increases with distance from the inner city in a radial manner. The explanation put forth by Alonso (1964) and Muth (1969) does not rely on any assumptions about family status or ethnicity, although it does assume that consumers prefer to purchase recently constructed housing.

There are a number of limitations to ecological models. From the outset, there was an inherent incongruence between actual neighbourhoods and the mutually exclusive units of analysis with relatively uniform populations, into which space was partitioned by the researcher (Hatt, 1946, White, 1987). There was always the limitation that findings about census tracts could not be attributed to the individuals who resided there without committing an ecological fallacy. While most factorial ecologies used census tracts (Rees, 1971), the selection of a different areal unit would necessarily lead to different findings, a matter referred to as the modifiable areal unit problem (Wong, 2003, Reardon and O'Sullivan, 2004). As factorial ecologies became more numerous, divergent findings cast doubt on the notion that urban development would unfold in a linear and

predictable fashion that could be captured in a universal model of the industrial metropolis (Berry, 1971). The integrative model proposed by Murdie (1969), shown in Figure 2.2, was most prevalent in larger cities, while smaller cities had less commonalities in their social structure due to lower competition for land and less developed real estate markets (Bourne and Barber, 1971). The dominant dimensions of variation identified from factor analysis varied with social relations. Where low fertility rates were highly associated with class, as in the

Figure 2.2 Murdie's Ecological Model of Metropolitan Social Structure



Source: Murdie (1969, p. 9, Fig. 2)



American South, factors of socioeconomic and family status were not distinct from each other, and the strength of the ethnicity factor depended on the social cleavages of a given place (Abu-Lughod, 1991). Areal patterns were also found to depend on whether substantial build up of a city occurred before, during or after modern industrialization, and in the developing world, the colonial history of a city deeply impacted social structure. Throughout the late nineteen sixties and early seventies larger and larger variable sets were used by investigators in factorial ecologies of western cities (Davies, 1984). Additional axes of variation were identified that extended Murdie's (1969) model. However, there were few comparative studies, and differences in the variable sets and the derived component models in the numerous single city studies made it difficult to generalize findings. The parsimonious model of residential differentiation induced from factorial ecologies was ultimately found to be most applicable to cities where substantial development had occurred during modern industrialization, and this was typically found in western societies, although not all cities in these societies fit the model.

By the 1960s, as social movements challenged the status quo, the paradigm of the Chicago School began to seem less adequate to explain urban struggles and conflicts. In social ecology, inequality was perceived to be a natural function of metropolitan development, wherein class and ethnic differences would be subsumed with social mobility, and poverty would eventually be eliminated by public welfare and state-lead urban renewal (Jezierski, 1997). However, neo-Marxist theory provided an explanation for why urban inequality had persisted, despite economic growth. As in social ecology, neo-Marxist analysis explained urban phenomena in terms of economic process, but these were re-contextualized within the capitalist mode of production, without which, they argued, it is only possible to derive at best a partial understanding of the city (Jaret, 1983). It was postulated that urbanization, and urban inequity, arose from the interplay of structural variables such as the relations of production, consumption, exchange and the structure of state power (Walton, 1981 in Walton, 1993). Rather than framing the city in terms of competitive equilibrium, in which residential differentiation was the aggregate outcome of individual decisions, it was understood in terms of class conflict and contradiction. Extrapolating the urban implications of capitalism, Harvey (1985) posits that there is a contradiction between the necessity to reconfigure spatial relations in order to maintain economic growth and the durability of the built environment. Smith (1982)

applies this logic in an explanation of metropolitan inequity. Investment in the built form of the inner city created a physical and economic barrier to further investment, which made suburban development a more attractive venture, and simultaneously lead to the concentration of poverty in the dilapidated tenements of the inner city. Moreover, Smith points out that in the ecological explanations of urban decline, gentrification is an exception to the general filtering process, whereas neo-marxist explanations account for gentrification as a response to the investment opportunities presented by uneven metropolitan development. Over time neo-Marxist theory gave rise to the political economic approach, in which urbanization is interpreted in light of societal process and structure, and in which social inequity is explained in terms of group conflict (Smith, 1995). Such structural explanations have been criticised for disregarding actions that are motivated by conditions outside of class-based contradictions, for having a tendency to read complex social issues in economic terms, and for relying on theory to “prefigure answers to new questions” (Walton, 1993, p. 318). More recent work incorporates diverse perspectives and methods, explores the interplay of local actions and macro-structural processes within a global context, and emphasizes the importance of symbols, meanings, and culture, as well as social conflict and power differentials (Gotham, 2001).

More recently the Chicago School has also come under fire from postmodern urbanists. Their first criticism is that ecological models do not adequately explain the contemporary city. Based on studies of Los Angeles, which in many ways has become the archetype of the postmodern urbanism, Dear and Flusty (2002) argue that urban development no longer occurs in a regular manner, where both the residential suburbs and the central business district grow incrementally outward at their edges. They posit that processes of infill, densification and agglomeration have produced a polycentric metropolis (Dear, 2002, Dear and Flusty, 2002). Land uses may be located in proximity to each other, but are not necessarily functionally related, and each point in the city has the same potential to be connected to any other, or to be connected nationally or globally. The postmodern urban landscape is one of “multiple, differentially interconnected sites, arranged in a decentred, non-hierarchical fashion,” in which the city center does not organize the periphery, and where the so-called periphery has become ubiquitous (Dear, 2002, p. 85). Despite its inchoate appearance, researchers have identified elements of a postmodern landscape, such as historic preservation and the adaptive reuse of heritage buildings, mixed-use and multi-use developments, large-scale residential development

with complementary amenities, gentrified neighbourhoods, festival settings, high tech corridors and new industrial clusters (Knox, 1991, Hutton, 2004). The second criticism that postmodern urbanists have of the Chicago School is that its paradigmatic hegemony excludes numerous useful interpretations of metropolitan form (Dear and Flusty, 2002). Just as they assert that urbanization is no longer subject to an apparent overarching logic, the postmodern approach rejects the explanatory power of any master narrative. Not privileging any one reading of the city leaves room to re-think analytical categories such as class, urban and suburban (Dear et al. 2008). As postmodern urbanism strives to be theoretically and methodologically inclusive, it “remains fractured, incoherent, and idiosyncratic, even to its constituent scholars” (Dear and Flusty, 2002, p. 13). Working within the Chicago School paradigm, Shearmur and Charron (2004) fire back at postmodernists, first for simultaneously accepting claims that are based on the principle of testability in science and claims that are not testable; second, for refuting the existence of systemic processes in the development of LA, when the absence of such processes has not been demonstrated; and third, for claiming that LA is paradigmatic without identifying processes that may be investigated in other cities. Nonetheless, the postmodern challenge to urban studies and urban planning may be that the city has changed, and the way we understand it must change too.

Urban ecological theories are also called into question by recent empirical research. The Canadian literature on immigrant residential geographies has shown that the assimilation model may fit the settlement trajectories of some ethnic groups more than others, and the suburbanization is no longer automatically equivalent to residential dispersal, cultural assimilation or socioeconomic mobility (Mendez, 2008). Ecological assumptions about family formation and life courses are too rigid to describe the great variety of household forms in contemporary cities, and how individuals move in and out of different living arrangements over time (Rose and Villeneuve, 2006). Although the suburbs are still largely family oriented, the residential choices of high-earning, dual-income couples appear to be shaping spatial inequities, as other households pool incomes to deal with labour market insecurity (Wyly, 1999, Forrest and Kennett, 1997). We now have a rich tradition with which to understand contemporary change. Both postmodernism and the political economy approach have been used to characterize contemporary urbanization dynamics and to theorize about the possible outcomes of polarization for metropolitan social structure. This theory will be explored in the

following section. The quest to map out the spatial relations that arise with societal change has been imbued with new meaning by these theoretical developments.

## **2.5 Possible Outcomes of a Polarizing Social Structure**

Much of the study of contemporary metropolitan form aims to relate global economic and socio-demographic change to residential differentiation among divergent social groups. Attempts to formulate a theoretical framework such as Soja's (2000) postmetropolis as well as Dear and Flusty's (1998) chaotic vision of urbanization suggest that there are complex relationships between social change and spatial change. Theories focus on the connection between global forces and urbanization processes. They hold that spatial outcomes are subject to numerous local factors, so that the specific patterns of residential differentiation in any city are highly contingent. This is different from the earlier ecological models, which led to a parsimonious description of much of the social complexity of western cities, but were criticized for being overly deterministic in the face real political and social complexity. The foundational premise of contemporary theory is that that polarization is occurring, but this could lead to a number of possible outcomes.

Perhaps the most provocative conception of the contemporary city is put forth by Dear and Flusty (1998). Based on a comprehensive review and synthesis of what is loosely called the LA school of research, their principal conclusion is that urban form has become unpredictable, random, defying the neat spatial models of the Chicago School and the ambitious factorial ecologies that followed. Dear and Flusty (1998) posit that the current logics of the after-Fordist, globalised regime dictate a haphazard metropolitan form. This chaotic city-region is highly polarized, and the overall spatial structure is highly fragmented. The elite and their attendant professionals who are engaged in the command and control functions of the global economy occupy clearly delineated spaces of employment in corporate offices, and reside in exclusive, privatized communities, rich with amenities. Socially heterogeneous and spatially amorphous urban areas are home to the rest of a multi-ethnic population that constitute a supply of low-wage labour in the metropolitan economy. Though Dear and Flusty's article was published over a decade ago, proponents of the LA school still

assert the hypothesis that urban development no longer follows a generalizable, or even an appreciable pattern (Dear et. al., 2008).

Like Dear and Flusty, Soja (1997, 2000) takes Los Angeles to be a prototypical present-day city. By drawing his own empirical findings together with numerous discourses on urban change, he arrives at his theory of the *postmetropolis*. Both urbanization processes and social categories have become more varied in the after-Fordist period. With an increasingly polycentric urban form, where the range of land uses and activities is highly varied and interspersed across the ever expanding city, the social structure of the so-called suburbs has become more like what has in the past been recognized as urban. Spatial polarization is occurring across the divergent landscape formations of the city, and is happening in unexpected ways. Soja argues that many empirical studies of polarization do not adequately discern a highly nuanced social reality, and so cannot inform contemporary equity politics, which seeks to embrace communities and identities that are too heterogeneous to fit neatly within such categories as class, race, gender, age, etc. Despite this complexity, Soja believes that there are discernable patterns in metropolitan social structure. Yet, there may be limits to the generalizability of such findings, because the social-spatial patterns appear to be changeable, “unsettled” and “volatile.” Soja argues that pre-existing urban form affects the manner in which social polarization trends are articulated, so that the new social processes and spatial forms in the contemporary city are overlaid over the old, resulting in a city that is more complex and significantly different than what was before.

Hackworth (2005, 2007) takes up Dear and Flusty’s (1998) call for comparative research on cities beyond Los Angeles. From his study of the ten largest American metropolitan areas, Hackworth concludes that urban form has not become chaotic, rather it has been complex since the mid twentieth century. Within the increasingly polycentric metropolis, the historic core is still one organizing locus, even if it is one of many. Hackworth also finds that common patterns of investment and disinvestment in the built environment are emerging in response to both economic restructuring and neoliberal policies. Hackworth (2007) calls these patterns the “spatial corollary to wider social polarization” (p. 78). Using housing values, contract rents, and per capita income to proxy variations in the economic value of the urban landscape, Hackworth uncovers common processes of “inner-city revalorisation, inner-suburban devalorisation, and continued outer-suburban growth” (2005, p. 516). Yet, in addition

to commonalities Hackworth (2005) finds variation between cities. In Los Angeles, Huston and to some extent Detroit and Philadelphia continued disinvestment in the inner cities is occurring along with disinvestment in the inner-suburbs. In contrast, inner city reinvestment has occurred in Boston, New York, San-Francisco-Oakland, Washington, DC-Baltimore and Chicago along with disinvestment in the inner suburbs. Dallas-Fort Worth did not fit into either grouping. He stops short of positing that this typology comprises a generalizable model of urban development, but concludes that the variations in spatial patterns may be due to the relative newness of an emerging contemporary urban form.

Unlike the preceding theories, Marcuse and van Kempen (2000) argue that there is not a new spatial order in cities. Rather, longstanding inequities and divisions between quarters of the city have increased in magnitude and prevalence. The effect of macro-social forces is highly contingent on particular local histories, in which the degree to which urban populations were already polarized influences future polarization. Because present circumstances are so highly influenced by past development patterns and social relations, spatial polarization is being articulated within the pre-existing social structure. As a result, city residents can increasingly live entirely within socially homogenous zones, and there has been an “increased totalization of life within each quarter, combining residential, work, commercial, and recreational uses separately for the occupants of each” (p. 271). The differences between the quarters have not changed, but they have intensified, so that residents may be increasingly isolated from those who are different from themselves. Marcuse and van Kempen (2000) do take note of new socio-spatial formations within the quarters of the city such as gentrification and the formation of exclusionary enclaves, citadels and edge cities, but find that these developments are not enough to change the overall social structure of the city. In their reading of metropolitan change, there is a great deal of continuity between the Fordist and the globalizing city.

Each of these four interpretations of how polarization is articulated through urbanization processes suggests a very different spatial outcome: Dear and Flusty’s fragmented and chaotic city, Soja’s complex and socially heterogenous city, Hackworth’s emergent city, and the intensified social distance between the long-established quarters of the city in Marcuse and Van Kempen’s theory. The differences could be due, in part, to the cities on which the researchers base their conclusions. The spatial patterns of Los Angeles may be exceedingly

complex or even chaotic, as Soja and Dear and Flusty find respectively, but when Hackworth compares Los Angeles to other cities, he finds that it fits in with a particular type of dispersed metropolis, in which the inner city is not reviving. The fragmented, chaotic city may constitute one of a range of possible urban forms. Moreover, it is perhaps not surprising that Marcuse and van Kempen avoid universal generalizations, when they compare cities with widely varying histories and circumstances in Asia, South America, Australia and the United States. Whatever the manifest geographical patterns are in a given city, it is important to keep in mind that, as Marcuse and van Kempen caution, the degree of social polarization or inequality may not necessarily parallel the spatial separation of divergent social groups. The importance of the conclusions drawn by each researcher, however, is that they offer alternative explanations for urbanization processes in cities that are more or less affected by trends of economic restructuring and intensified global integration, demographic and cultural change, and neoliberal policy shifts.

With these caveats in mind, one can use the literature as a guide to outline the possible outcomes for metropolitan social structure that could arise with polarization. The alternative conceptions of the contemporary city vary in terms of the degree of order or chaos that they find in spatial patterns, and in the degree of continuity that they have with the Fordist city. Each theory also implies something different about urbanization dynamics. At one extreme, it may be that urban ecological processes have continued in an uninterrupted manner since the Fordist period. However, the possibility that there has been no change in spatial patterns may be considered a null hypothesis, against which evidence is mounting that metropolitan social structure is becoming reconfigured, in one way or another, with macro societal transformations. At the other extreme is the possibility put forth by post-modern theorists that there are no longer any discernable spatial patterns in metropolitan social structure, because urbanization processes have become so haphazard. As Dear and Fulsty (1998) write, in the postmodern city “Capital touches down as if by chance on a parcel of land, ignoring the opportunities on intervening lots, thus sparking the development process” (p.66). This creates not a new metropolitan form, but a formless metropolis. An alternative outcome is that new social-spatial patterns are emerging along with new urbanization processes. Polycentricity or divergence between the urban sub-regions of the inner city, inner suburbs, and outer suburbs would indicate changing patterns of investment in the built environment. These patterns may

be leading to a new metropolitan form in which the relationships between the physical landscape and residential differentiation are rearticulated. Finally, it is possible that past spatial inequities are becoming increasingly entrenched. Specific urban forms, such as revitalized waterfronts, gentrified neighbourhoods, and fortress-like office complexes could be built, but rather than leading to a qualitative change in metropolitan form, each new development form could quantitatively increase the differences between the quarters of the city.

The way polarization is expressed in metropolitan social structure flows from how the political implications of restructuring are accounted for in each theory. Moreover, although urban planning activities are not measured in the current research, the political implications of restructuring are indicative of the role of urban planning, as a political and social endeavor, in the prevailing urbanization dynamic. If there has been no change in spatial patterns, as the null hypothesis states, this may indicate that modern planning has continued. A random social structure could indicate that the role of the state in regulating investment has declined, global capital has become highly influential on local land markets, and local planning efforts have failed to mediate this influence. Dear and Flusty (1998) argue that following welfare state retrenchment urban populations have become politically fragmented and common citizenship ideals have disintegrated. Through this degenerating polis, the forces of global capitalism pass unmediated to shape urbanization and metropolitan social structure. Similarly, Soja (1997, 2000) argues that government has little capacity to address polarization. But while Soja is optimistic about the potential power of new coalitions for a living wage and regional equity, for Dear and Flusty the foreseeable political response will be the state-lead defence of elite enclaves, and the repression of marginalized labour and socially excluded minorities. Based on Soja's interpretation, one might expect to see that areal patterns of social status differentiation have become similar in both the city and the suburbs of an increasingly polycentric city, so that the metropolis is peppered with contrasting concentrations of residents with diverging status. This checkerboard pattern would perhaps be similar to what would be expected if Dear and Flusty's interpretation of metropolitan social structure were accurate, except that fewer remnants of the Fordist social structure might remain. It could be that the clearest areal zones in Dear and Flusty's city are highly affluent ones, while the rest of the city would have a high degree of social variation, without discernable patterns.



In contrast, Hackworth (2005, 2007) perceives an effectual state, but one that has shaped the spatial outcomes of polarization in a manner that promotes economic growth, while making only limited efforts to ameliorate social polarization. According to him, the neo-liberalization of urban policies has resulted in a renewed compatibility between the interests of the state and capital, which is producing common development patterns and forms of spatial polarization in various cities. Hackworth discerns a great deal of order in the after-Fordist city, but he finds that the social status of urban zones is changing and clear discontinuities are apparent. Those residents who are disadvantaged by polarization trends reside in what were once prosperous post-war suburbs. Many relatively affluent residents continue to move to the newer suburbs, yet in many cities enough of these residents are choosing to reside in the inner city to increase the affluence of this zone. If it is possible to identify new patterns in social structure, then it may be that contemporary planning, along with other public interventions and market factors, is now part of a new urbanization dynamic that is re-organizing the city.

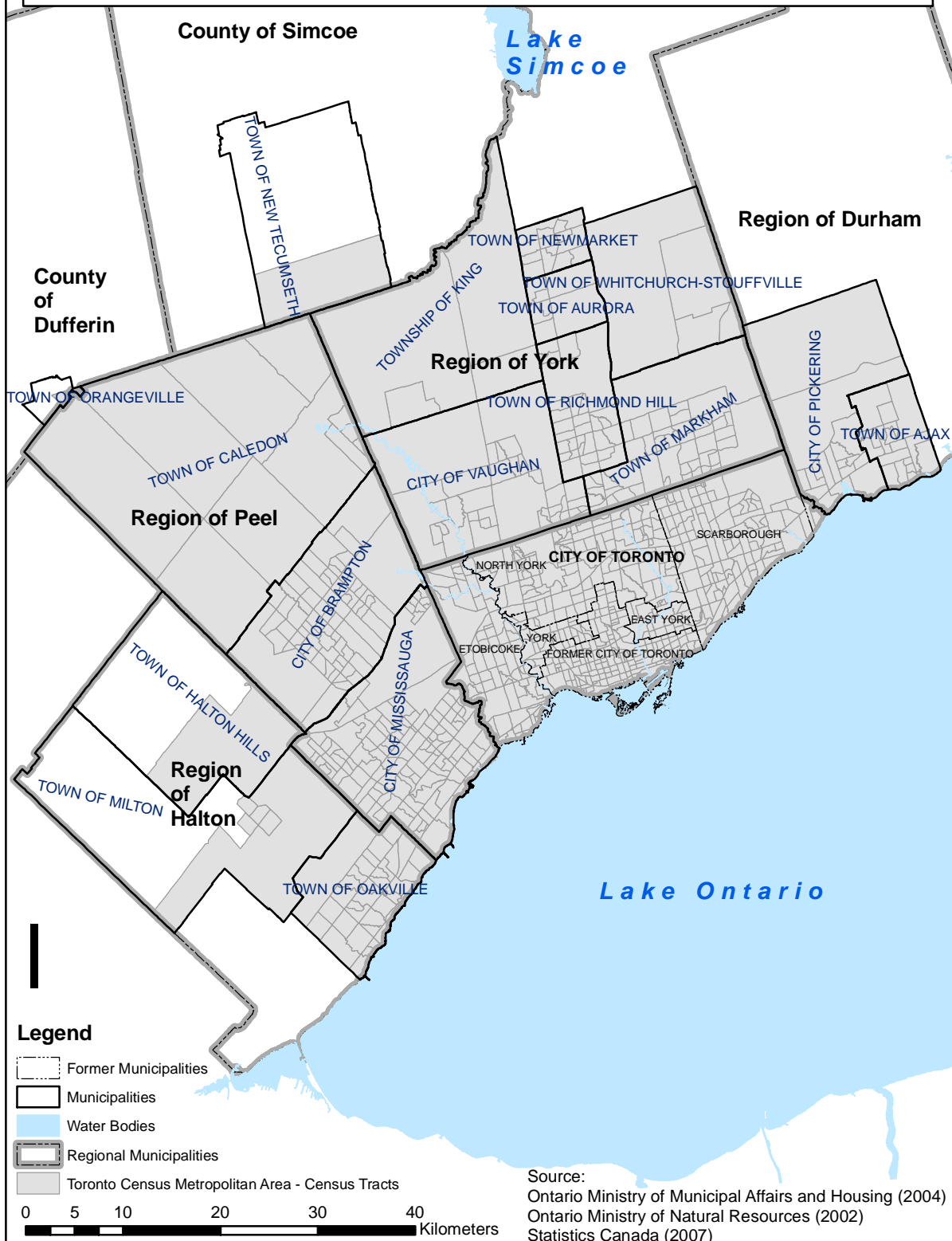
For Marcuse and van Kempen (2000) the particular neoliberal policy context of a given city is but one of a list of contingencies that affect social spatial outcomes. They equally emphasize the pre-existing natural and built environment, pre-capitalist, non-capitalist and colonial histories, the level and type of national development, past racial and ethnic relations, and the past level of polarization. With so many contingencies, Marcuse and van Kempen conclude that the residents of cities around the world have and may continue to influence urban development in many active ways, through both “the instrumentality of the state and through resistance in civil society” (p. 274). Such local activism challenges the conventional wisdom that globalization is an unstoppable and unidirectional force, but may also limit the efficacy of urban planning to shape broader metropolitan development. If pre-existing spatial disparities have been enhanced, then it may be that incremental planning, along with incremental market changes have not lead to a qualitative in change metropolitan form, but they have quantitatively increased the differences between the urban quarters. One would expect to see similar areal patterns in both the Fordist and the contemporary city, and that the quarters of the city have not changed in size or location, but that residents of similar social status have become more concentrated within them than they were in the Fordist period.

## **2.6 The Case Study: Polarization in the Toronto Metropolitan Area**

The Toronto metropolitan area is an appropriate place in which to investigate polarization in the context of changing metropolitan social structure (Figure 2.3). Toronto is a Canadian example of a post-Fordist, globalised metropolitan economy (Coffey, 1994). Indeed, Toronto has also been identified as global city based on the extent of legal, accounting, advertising and banking firms with international clients (Beaverstock, Smith and Taylor, 1999). High proportions of Canadian immigrants settle in Toronto, and comprise a significant contribution to metropolitan population growth (Bourne and Rose, 2001, Bourne and Simmons, 2003). Gentrification in central Toronto is well documented. Professional and managerial workers increasingly reside in the luxury condos and gentrifying neighbourhoods of the inner city, the primary center of business and financial services (Ley, 1996, Meligrana and Skaburskis, 2005). At the same time, there is mounting evidence that poverty and disadvantage are becoming increasingly concentrated in the inner suburbs of Toronto, which were largely built in the decades after WWII (United Way of Greater Toronto and The Canadian Council on Social Development, 2004, Ley and Smith, 2000, Heisz and McLeod, 2004, Bunting, Walks and Filion, 2004). Planners in Toronto were able to realize a highly functional Fordist urban form in the post-war period, but since then they have had to contend with the downloading of responsibility for services from senior levels of government, the mounting social needs of an increasingly diverse population and aging physical infrastructure, while struggling to position Toronto as a global city (Donald, 2002B, Frisken, 2007, Kipfer and Keil, 2002).

There has been a fair amount of research into polarization in Toronto. Early research by Bourne (1992) examines changes in income in Toronto from 1950 to 1985. He concludes that there are three cities in Toronto: the city of the socially impoverished, expanding elite neighbourhoods, and persistent and stable middle income neighbourhoods. While the richest census tracts have increased their wealth and the poor ones have lost ground, in between these increasingly homogenous neighbourhoods are census tracts that are becoming more socially heterogeneous. In many inner city tracts, the pull on average incomes of the increasing presence of very affluent families is offset by an increase in smaller households. Yet, in Bourne's reading, evidence of polarization is "inconclusive" (p. 1314), and there is a great deal of stability in metropolitan social structure. By 1985 the Fordist status gradient still persists for

**Figure 2.3 - Toronto Census Metropolitan Area  
Context Map**



household income, with status increasing with distance from the metropolitan core and then declining again in the urban fringe. Although this status gradient had flattened over the study period, and had become completely flat for per capita income, Bourne concludes that "the well-established social-status gradient of classical urban ecology, in which household status (and income) increases with increasing distance from the city centre, has persisted over time" (p. 1313).

Two separate studies, conducted by Murdie (1998) and Walks (2001), looked at trends in from the nineteen seventies to the early nineties and find evidence of both polarization and professionalization in Toronto. Employment in managerial and professional occupations has increased to a greater extent than has employment in low level service occupations. At the same time, changes in income quintiles and the dissimilarity index suggest that income polarization is occurring. By mapping spatial concentrations Walks (2001) shows that consistent with gentrification, managers and professionals are increasingly concentrated in the inner city, but there are also persistent concentrations of the unemployed and those who have low-level service sector jobs, which contribute to the high level of social heterogeneity in this zone. He further finds that the residential concentration of manufacturing workers have shifted and re-concentrated in suburban residences. Murdie (1998) links the location of public housing, which is reserved for low-income households, on relatively less accessible sites in the post-war suburbs to social exclusion in this part of the city. Nonetheless, he shows that despite increasing poverty in the inner suburbs, by the early 1990s the inner city still had relatively more low-income families, a higher unemployment rate, and more residents with low levels of educational achievement. Walks's analysis of income supports Murdie's findings. Maps depict rising average household incomes, relative to the metropolitan average, in the outermost suburbs and exurbs, and relative declines in the inner suburbs and the inner city, leading Walks (2001) to find that, "Other than the central elite neighbourhoods, which have largely held on to their position, income would appear to be decentralising" (p. 433). This trend is similar to what occurred during the rapid metropolitan expansion of the Fordist period. Walks (2001) concludes that there is a bifurcation occurring between the Fordist and the post-Fordist city:

The contrast between inner city and suburb witnessed during Fordism appears to have evolved into a contrast in development patterns between those zones built up during Fordism (the inner area and the mature suburbs) and the outer zones (the new suburbs and the exurbs). (p.439)

Both studies find that the increase in low-income families and households in the post-war suburbs, and gentrification in the inner city have contributed to an evening-out of the social status differentials between these zones. Walks further finds that households in the newer parts of the city still appear to be more affluent than the older parts, which is similar to the social status gradient that Bourne found.

The most recent study by Hulchanski (2007) looks at changes within the City of Toronto from 1971 to 2000. Perhaps because of his geographic focus, which excludes the suburbs of the metropolis that were built since the early 1970s from the analysis, or perhaps because he uses more recent census data, Hulchanski (2007) finds new spatial patterns. There has been a clear polarization between tracts with high individual incomes, which have consolidated in central locations in proximity to downtown subway lines, and numerous low income tracts that are located to the east and west of the downtown and in the post-war suburbs. Tracts that have the highest incomes in 2000 and the highest property values, concentrated white-collar workers, relatively few immigrants and people of colour, and small households with relatively few families. The central location of affluent tracts allows residents greater access to jobs and transit, while many residents of the low income tracts must travel further to find employment, but have limited access to the subway lines. Those census tracts where income declined the most have relatively low incomes and property values in 2000, high concentrations of blue collar workers, a high level of ethnic and racial diversity, larger households, and more children and families. A group of middle income tracts where income changes have been less pronounced, and which are demographically more representative of the overall city, is located in areas between the higher and lower income tracts. By the end of the study period, the majority of census tracts are no longer within the middle income ranges (defined as between 20% and 120% of the metropolitan average). Hulchanski (2007) findings are limited, however, because he does not consider the metropolitan implications of polarization. This is surprising given that Hulchanski (2007) states that “the labour and housing markets of the city and the outer suburbs are connected” (p. 6). He finds that spatial polarization is occurring in the outer suburbs that were built since 1970, and he interprets the

fact that polarization is occurring everywhere as evidence that middle income residents are not abandoning the city for the suburbs. This is among his many important findings, and it hints at new metropolitan trends, but the implications are not explored. Hulchanski does not examine how social spatial change in the inner city and the post-war suburbs compare to social status in the outer suburbs in the context metropolitan-wide polarization.

There appears to be a consensus amongst these studies that there is a link between the spatial articulation of polarization and such elements of urban form as luxury condos, rapid transit routes, employment agglomerations, older private rental stock and social housing developments. The location of increasing poverty in the post-war suburbs is conditioned by the dispersal of both public and rental housing under the governance structure of Metropolitan Toronto in the Fordist period. Rising average incomes in the inner city are associated with gentrification through renovation and redevelopment projects, in particular condominium construction. Proximity to subway routes and to employment also characterise those tracts where individual incomes have risen in the past decades. However, while there is consensus on these trends, each study identifies a different outcome for metropolitan social structure. While Bourne (1992) finds evidence of stability in the City's social structure, Walks (2001) finds evidence of convergence between the social status of the inner city and the post-war suburbs, and Hulchanski (2007) finds evidence of divergence between these urban zones. The studies differ in terms of the income variables used (Bourne, uses household and individual income, Walks uses household income, Hulchanski uses individual income), the time periods studied, and geographic extent of the analysis. These methodological differences have contributed to different conclusions. Nonetheless, given that these studies look at the same phenomenon, in the same city and that the study periods overlap, one might not expect that each study would make the same findings, but that each would identify a similar trajectory of change, or a similar level of stability. It may be that the differences in findings arise because change in metropolitan social structure occurs over time. In the earliest study, metropolitan social structure appears to be relatively stable, while by the time of the later studies, changes have become apparent. It could be that the social status of the post-war suburbs and the inner city became more alike before they became more different, due to rising social status in the inner city, and declining social status in the post-war suburbs. Polarization in Toronto may be

occurring along with a change in urbanization dynamics, and this change may have become more apparent as the research as progressed.

It may be telling to compare findings for Walks and Hulchanski, which are the two most recent studies. Walks (2001) shows that the outer suburbs and the urban fringe remain relatively affluent when compared to the inner city and post-war suburbs. Hulchanski's (2007) findings do not refute this, as his research focus does not include the outer areas of the city, but he presents evidence that the social status of the post-war suburbs is diverging from that of the inner city. From these trends, it may be hypothesized that polarization in Toronto is accompanied by new spatial patterns in metropolitan social structure. The social structure of the city is being reconfigured in a manner that sees an increasing level of socioeconomic advantage in the inner city, relative decline in the post-war suburbs, and the continued decentralization of advantage in the expanding outer suburbs and in the urban fringe.

## **2.7 Hypotheses**

It would be worthwhile to further explore the connections between polarization, metropolitan social structure, and urban growth and change. There is evidence of both change and stability in metropolitan social structure. The literature on polarization and social structure posits a range of outcomes from chaos to the deepening of Fordist spatial disparities. As urban planners seek to guide development, metropolitan polarization deepens social cleavages and presents a new challenge to that long-time justification for urban planning, the public interest. The following four hypotheses are derived from the literature reviewed in this chapter:

- 1) Spatial polarization in individual and household income has increased with the transition away from Fordism toward a more globalized and flexible urban context.
- 2) The level of individual and household income will diverge between each of the urban sub-regions identified in the framework: the inner city, the post-war suburbs and the outer suburbs. Over time, individual and household incomes will increase in the inner city and decline in the post-war suburbs. In the after-Fordist period, the outer suburbs will have high individual and household incomes, on average, relative to the rest of the metropolitan area.

- 3) Changes in indicators of social status that are related to income polarization will reflect the divergence in income levels in each of the urban sub-regions.
- 4) Polarization in the Toronto metropolitan area will be spatially manifested as an increasing level of socioeconomic advantage in the inner city, relative decline in the post-war suburbs, and the continued decentralization of advantage in the expanding outer suburbs and in the urban fringe.

It is expected that contemporary metropolitan social structure is qualitatively different from that of the Fordist city, and that social structure will exhibit new features as social relations have become tied up with polarization processes. Indicators of socioeconomic status, household composition and immigrant settlement will exhibit new, distinct spatial patterns. Moreover, spatial variation in income and other social status indicators will diverge within areas of the city that were developed in different societal contexts, with different planning approaches, and that have different land use and transportation dynamics.



### 3.0 Methodology

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The methodology presented here is intended to assess polarization, changes in metropolitan social structure, and social spatial change in those areas of the city that have divergent built forms. Data from the 1971 and 2006 censuses are used. In order to assess income disparities changes in the distribution of per capita and household income are measured with histograms, quantiles and indices. Data from the 2001 census is included in the assessment of income disparities in order to provide further information about the direction of change, because there was a change in the way that income data was collected in the 2006 census. Physical urban form is modeled based on the predominant age of the housing stock. Dimensions of social structure are operationalized, including income and other variables of socioeconomic status, household composition and immigrant status. Metropolitan social structure is investigated by creating maps of concentrations and clusters for each social status variable. Choropleth maps are created in order to visualize spatial variation among tracts across the study area. These include maps for the entire metropolitan area in 1971 and the 2006, and tract level change in social status variables in the inner city and the post-war suburbs. Local Moran's I is used to map statistically significant clusters of tracts with similar concentrations of a given variable and statistically significant spatial outliers in each census year. The spatial variation that is apparent in the choropleth maps will be compared to the location of statistically significant clusters and outliers in the findings chapter. Metropolitan social structure is further investigated by calculating the concentration of social status indicators in each urban zone. To assess how social change is related to income disparities across metropolitan space the concentration of social status indicators is calculated in tracts with relatively high, middle and low median household incomes for 1971 and 2006.

#### 3.1 The Data

Data is drawn from the census, collected by Statistics Canada every 5 years. Databases and census tract boundary files are obtained from Statistics Canada. The analysis uses Microsoft Excel for computations and ArcGIS for mapping. The projected coordinate system of the data used in ArcGIS is the Universal Transverse Mercator Zone 17 and the datum is the

North American Datum 1983 (Statistics Canada, 2007). Metropolitan change is investigated by analyzing the Toronto census metropolitan area (CMA). Statistic Canada (2002) defines CMAs as urban areas consisting of one or more adjacent municipalities situated around a major urban core, which has a population of at least 100,000. Adjacent municipalities must have a high degree of integration with the central urban area, as measured by commuting flows, in order to be included in the CMA.

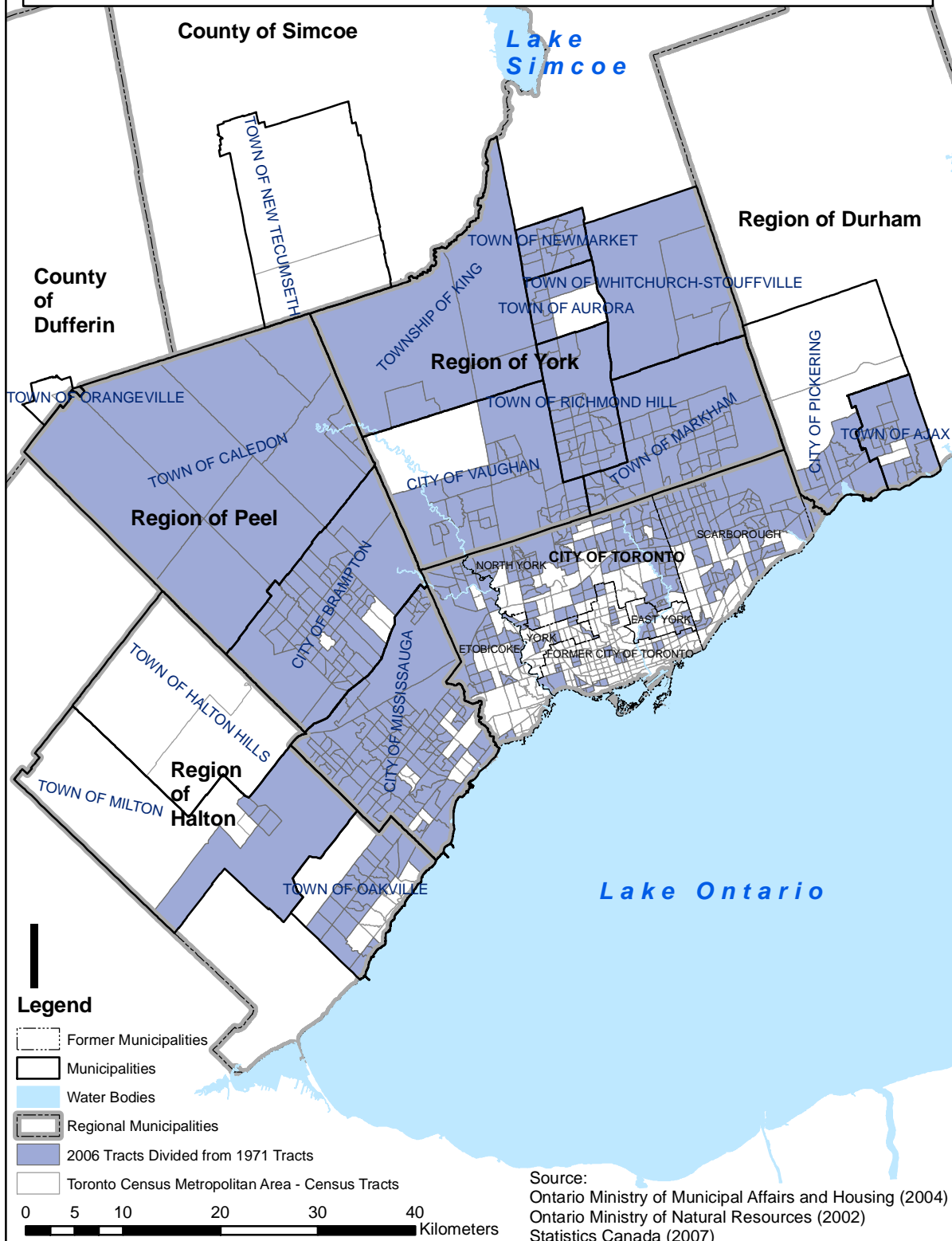
Intra-metropolitan variation is investigated by using census tracts as the unit of analysis. Statistics Canada (2010) defines census tracts as relatively stable geographic areas that usually have a population of 2,500 to 8,000; that are as compact in shape as possible; and that have a relatively homogeneous population in terms of socioeconomic characteristics at the time that they are delineated. CMAs are subdivided into census tracts. Using census tracts as the unit of analysis means that the analysis will not pick up more localized changes, such as among neighbourhoods or subdivisions, which are often manifested at a smaller spatial scale. A number of longitudinal studies of metropolitan change have looked at census tracts across Canadian CMAs, and the findings herein may be compared to this broad literature (Such as: Walks, 2001, Ley, 1996, Ley and Smith, 2000, Meligrana and Skaburskis, 2005, MacLachlan and Sawada, 1997, Bunting, Walks, Filion, 2004, Davies and Murdie, 1993).

In each census, some additional tracts are added and some tracts from the previous census are divided into new tracts. In order to create maps that are comparable over the study period, the spatial relationships between tracts must be preserved, particularly in order to measure spatial clustering, which will be discussed in section 3.6. The approach to matching tracts taken in this research is adopted from Walks (2001) and Hulchanski (2007). Data from the 1971 census is matched to the 2006 census tract boundaries. Tracts in 2006 that are outside the 1971 CMA boundary are excluded from the analysis. This was done in order to map spatial variations. The original 1971 and 2006 tracts are used to calculate the measures of income polarization and inequality, statistics for the urban zones, and statistics for the income ranges for the respective census year. The latter year tract boundaries are chosen, because this preserves the social variation in the outer region of the city in 2006, where much development occurred over the study period, and where census tracts have been divided to maintain the standard population of each tract. The use of the 2006 tract boundaries rests on the assumption that the population in a census tract is evenly distributed. Of course this is not realistic, but it is

a reasonable assumption in the context of the current research, which looks at inter-tract variations. Given this assumption, the proportion or average of a given social status indicator is uniform across the tract. The proportion or average for each tract in 1971 is associated with the 2006 tract boundary. For tracts that have been divided, the 1971 proportion or average is associated with all the resulting tracts in 2006. Each new tract that was divided from a larger tract in 1971 occupies a portion of the space of the original tract. In these instances, data from the 1971 census is associated with a different geographic area than for which it was collected. This affects the results, as would any change in areal units (Wong, 2003, Reardon and O'Sullivan, 2004). The method used here reduces the precision of the 1971 maps and the maps of tract-level changes from 1971 to 2006. This affect is greatest in the area of the CMA that is part of the urban fringe in 1971. (The method used to define the urban zones is addressed in section 3.4.) Of all the tracts in 2006 that resulted from division of tracts in 1971, 59% are in the part of the CMA that is urban fringe in 1971. A minority of the tracts that are the result of divisions are in the area of the CMA that had been urbanized by 1971. 6% of all tracts that are the result of division are in the inner city and 34% are in the post-war suburbs. Even though 70% of the tracts in the 2006 CMA are the result of tract divisions over the study period, a much smaller proportion of tracts are located in those parts of the city that were built up by 1971. Figure 3.1 identifies tracts in the 2006 CMA that are the result of tract divisions that occurred since the 1971 census, and that are within the boundary of the 1971 CMA. Findings for the urban fringe of the CMA in 1971 should be interpreted with caution, as should any comparisons of tract level patterns between the urban fringe in 1971 and in 2006.

A few cases were excluded from the analysis. Census tracts 640 and 650 were excluded, because they appear in the 1971 database, but not in the 1971 shapefile. As a consequence it is not possible to map the data for these tracts. Moreover, there are no corresponding tracts in the 2006 database or in the 2006 shapefile. A number of tracts are excluded from the analysis, because these tracts are outside of the 1971 CMA boundary, and it is not possible to associate them with any data from 1971. These include the 2006 tracts 455 to 456.03, 470 to 482, 484.01 to 485.02, 591 to 593, 622 to 626, 631 to 639 and 830 to 832. The borders of the CMA in 2001 were the same as they were in 2006, and tracts in 2001 that are outside of the boundaries of the 1971 CMA are excluded from the analysis. Statistics Canada also suppresses information about some tracts, which have very low populations. In 1971, this

**Figure 3.1 - 2006 Census Tracts that are the Result of Tract Divisions Since 1971 in the Toronto CMA**



includes tracts 3, 6, 8, 9, 12, 13, 14, 17, 20 and 205. In 2001, this includes tracts 3, 6, 9, 16, 32, 205, 376.06, 401.05, 612.01 and 612.10. In 2006 this includes tracts 3, 6, 9, 33, 61, 205, 376.06, 401.05, 612.01 and 612.10. However, because so few tracts are affected, this should not appreciably affect the analysis.

The metropolitan social structure as it was in 1971 is taken to represent that of the Fordist period, because this was the latest census prior to the crisis of Fordism. The 1971 census measures the city as it was after over two decades of Fordist development and rapid urban growth, following the Wars and the Depression. The 2006 census is the most recent census year available at the time of this research. Data from the 2006 census is taken to represent metropolitan social and spatial conditions arising after at least two decades of social, political and economic change. Changes in metropolitan social structure that occur over the study period are interpreted as those that have accompanied political and economic restructuring.

### **3.2 Measures of Income**

There is some question as to what to measure when examining polarization. The polarization literature predicts growing disparities in earnings, due to changes in the occupational structure of globally integrated cities. However, Hamnett (1996) has shown that sources of income other than earnings, such as social security benefits, can factor into income polarization. The studies of polarization in Toronto by Walks (2001) and Murdie (1998), discussed previously, have found that income polarization is occurring along with professionalization of metropolitan occupational structures, an association that fits with Hamnett's (1996) argument. It seems reasonable to measure total income, which captures income from a range of sources such as earnings and social benefits in this analysis. Total income refers to income from all sources received by persons 15 years of age and older, including employment, government programs, pensions, investments and any other money income (Statistics Canada, Census Division, 1972, Statistics Canada, Census Operations Division, 2010). Total income is reported for the calendar year before the census. Per capita income is taken to be an indicator of the income levels of individuals. Per capita income is defined as the total income of the residents fifteen years of age and older of a given geographic

area divided by the total population of that area. The per capita income of a census tract is found by dividing the total income in the tract by the population of the tract. In order to calculate the total income of a tract, the total count of persons who reported income is multiplied by the mean personal income. The same calculation is done at the CMA scale in order to find the per capita income of the CMA. Data in the 1971 census for people who reported income is disaggregated by gender. So, in order to calculate the total income, the total count of males who reported income was multiplied by the mean personal income for males, and then added to the product for females. The sum is then used to find the per capita income. In the 2001 and 2006 censuses, aggregated total income was reported.

Total household income is also measured, because there is evidence that income polarization is occurring among households (Bourne and Rose, 2001, MacLachlan and Sawada, 1997). Households are a unit of interest in much urban planning analysis, and the demand for housing is a major factor in planning for community development. Because households may be formed by related or unrelated individuals, or by single persons, households are a more appropriate unit than families, given that living arrangements have become more diverse. Statistics Canada defines household income as the total income of all members of a household who are fifteen years of age and over in the year before the census. A household is a single person or a group of related persons, including two or more families, or unrelated persons who share a dwelling as their usual place of residence in Canada. Household income data is reported for to private households only. Collective dwellings are excluded. The average household income of a given geographic area, census tract or CMA, as reported in the census is taken to indicate the household income level of all households in that area.

Because data collection methods for income changed in 2006, data from the 2001 and 2006 censuses are analyzed and compared with findings from 1971 in order to yield more robust evidence of polarization. 2006 was the first year that respondents could opt to have income data collected directly from their tax records (Statistics Canada, 2008A). Over 80% of respondents chose this new method of data collection. As a result, income data in 2006 is more precise; that is, there is less rounding of reported incomes. Also, more incomes are reported that are very high and very low. At least part of any increase in polarization between 1971 and 2006 would be due to this change in data collection methods. In order to establish the robustness of the polarization trends, income data from 2001 is also analyzed.

Two differences in the population for which income data was collected in 1971 and the later censuses should be noted. In 1971, the income received by institutional residents was included in total income. The population of institutional residents is not reported in the 1971 census, but it may be inferred that it is a small one. The inclusion of institutional residents in the 1971 income data may have resulted in more low income respondents than would be the case had this group been excluded.<sup>1</sup> The second difference in the population for which income is reported is that in 2001 and 2006 the income received by non-permanent residents was included in total income, whereas this was not included in the 1971 census. Non-permanent residents are a separate category from immigrants, and their population in 2006 is small. The inclusion of non-permanent residents may result in a greater degree of polarization in the distribution of total income than would be the case had they been excluded.<sup>2</sup>

### **3.3 Methods Used to Measure Income Polarization**

The first part of this analysis examines the degree to which spatial income polarization and inequality have changed over the study period. The analysis is done separately with individual and with household income. The examination of histograms allows us to visualize the spatial distribution of income across the metropolitan area and to make a cursory assessment of changes in the shape of that distribution over the study period. This assessment is supported by dividing the distributions of tract per capita, tract mean household income and tract median household income into three quantiles based on the respective average income in the CMA. With polarization, it may be expected that the middle income range would become

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<sup>1</sup> Residents who do not reside in private dwellings account for 1.7% of the population of the Toronto CMA in 1971. This would include residents of collective dwellings, such as hospitals, military camps, and other institutions, as well as commercial establishments such as hotels. Some, but not all, of the residents of collective dwellings are institutional residents. The inclusion of the income of institutional residents in the data for total income would increase the number of people for which income was reported by less than 1.7% of the population of the Toronto CMA in 1971, or 44,150 people. Short-term residents of institutions may have been able to maintain a relatively stable income with the transition back to their regular dwelling. Longer-term institutional residents may rely on pensions or other social benefits and have lower incomes.

<sup>2</sup> Non-permanent residents are defined as persons with a work or study permit, refugee claimants and family members living in Canada with them. Non-permanent residents comprise 1.5% of the population of the Toronto CMA in 2006, or 76,320 people. The income distribution of non-permanent workers is more polarized than that of Canadians overall. The 2006 census showed that non-permanent residents with full-time occupations are twice as likely as the Canadian-born to earn \$3,000 and over per week (5% of non-permanent residents vs. 2.5% of Canadian-born), and they are also twice as likely to earn less than \$500 per week (46% of non-permanent residents, 23% of Canadian-born) (Thomas, 2010).

less populated. Conclusions are limited, though, because the selection of income intervals influences the degree to which polarization is detected (Wolfson, 1997). More precise measurements of changes in the distribution are made using the Gini index and the polarization index that has been developed by Esteban and Ray (1994) and Esteban, Gradín and Ray (2007). All calculations are done in Excel.

The polarization index allows a more accurate measure of income polarization than examining histograms or income quantiles. The more familiar Gini is also calculated, so that inequality trends may be compared with polarization trends. Income polarization is conceptually different from income inequality (Sassen, 2001, Wolfson, 1997, Esteban and Ray, 1994, Esteban, Gradín and Ray, 2007, MacLachlan and Sawada, 1997). The Gini measures the level of inequality or dispersion in the income distribution, while the polarization index measures both income dispersion and concentration at disparate points along the distribution. There are instances where polarization increases at the same time that income inequality decreases (Wolfson, 1997). For example, transfers of income from one individual to another can result in a more bimodal income distribution, but one where more individuals have incomes near the middle of the distribution. This is also an example of when income quantiles may not be able to detect polarization, depending on the ranges used. The geographic distribution of income is also subject to this apparent contradiction, as MacLachlan and Sawada (1997) point out. They show that the income of a city can become more polarized, yet also more equal, due to changes in the population of the areal units of measurement, even when the average income of each unit stays the same. Even if the income distribution is not becoming more polarized, growing income inequality would have important social implications. Conversely, a more polarized geographic distribution of income may lead to greater social isolation among divergent groups within the city (Esteban and Ray, 1994).

The Gini index, developed by Corrado Gini, has been widely used in the social sciences (Gini, 1912, 1921). Pertinent to this study, the Gini has been used to assess the geographical distribution of particular characteristics among census tracts within a city (Dawkins, 2006, MacLachlan and Sawada, 1997, Myles, Picot, Pyper, 2000). The value of the Gini ranges from zero to one, with zero representing a perfectly equal distribution of income, and one representing the other extreme, in which one region would have all the income and only one resident. Various methods of computing the Gini index have been developed. The formula



used here (Equation 1) comes from Kendall and Stuart (1977, p.47), and was employed by a MacLachlan and Sawada (1997) in their study of polarization across Canadian cities.

$$(1) \text{ Gini Coefficient} = \frac{\left( \frac{1}{N^2} \right) \left( \sum_{j=1}^n \sum_{k=1}^n |x_j - x_k| f_j f_k \right)}{2\mu} \quad (\text{Kendall and Stuart, 1977})$$

In this equation,  $x_{j,k}$  represents the mean income for each census tract in dollars, and  $f_{j,k}$  represents the population (households or persons) of census tracts  $j, k = 1 \dots n$ . The mean income for the entire CMA is represented by  $\mu$ . Lastly,  $N$  in the formula represents the CMA population.

The polarization index used here,  $P^{\text{EGR}}$ , was developed by Esteban and Ray (1994) and Esteban, Gradín and Ray (2007). The index was developed to quantify the level of opposition between increasingly separate social groups, which are posited to be internally similar, but distinct from each other. This interpretation encompasses the process of polarization as it has been widely defined in the literature (Chiu and Lui, 2004, Hamnett, 1996, Tai, 2006, Burgers, 1996, Baum, 1997, Sassen, 2001). As polarization occurs, the population clusters around separate income poles, and maximum polarization occurs when the population is concentrated in two poles at either end of the distribution. Yet, the index leaves open the possibility that the distribution is becoming multi-polar rather than bipolar. Like the Gini, the  $P^{\text{EGR}}$  varies from zero to one as polarization increases.

In order to measure polarization, the continuous distribution is subdivided into  $n$  groups, such that the income inequality between groups is maximized and the income inequality within groups is minimized. The number of groups must be defined prior to analysis. In this research, the data is divided into two and then into three groups based on an examination of the income histograms for the two study years. The optimal grouping of the income data is arrived at through an iterative process, described by Davis and Shorrocks (1989) and Aghevli and Mehran (1981). This was the same process used by Esteban, Gradín and Ray (2007) in their application of the polarization index. When the data is to be divided into more than two groups, the process begins by sorting the data by income and then dividing the data into three equally sized groups. An optimal grouping is achieved when the upper

bound for incomes in one group and the lower bound for incomes in the group above it are equal to the mean income of the two groups. When there are only two groups, the optimal grouping is found by partitioning the distribution at its average. If the exact value of the mean is not found in the data set, then the cases are divided such that the closest value below the mean is included in one group and the closest value above the mean is included in the other. Optimally grouped income data has the least possible income dispersion within the groups and the greatest possible income dispersion between the groups.

The level of polarization between the groups is calculated as follows:

$$(2) \quad P^{ER}(f, \alpha, \rho) = \sum_{j=1}^n \sum_{k=1}^n p_j^{\alpha+1} p_k |\mu_j - \mu_k| \quad (\text{Esteban, Ray, 1994})$$

where,  $\mu_j$  represents the mean income of group  $j$ , normalized by the mean for the CMA, and this is done for groups  $j=1 \dots n$ . The share of the CMA population that is included in the groups is represented by  $p_{j,k}$ . The original income distribution is represented by  $f$ , and  $\rho$  is the distribution of the grouped data. The sensitivity of the index to changes in the distribution is set by a positive constant,  $\alpha$ , which captures the importance of group identification in determining overall polarization (Esteban, Gardín, Ray, 2007). This positive constant is set at 1, 1.3, and 1.6, in order to fulfill a set of axioms put forth by Esteban and Ray (1994), and as applied in the literature (Esteban, Gardín, Ray, 2007, Ezcurra, Pascual, Rapún, 2006, Gradín and Rossi, 2006). Note that equation (1) is very similar to the Gini index. Indeed, the closer that alpha is to one, the more similar  $P^{ER}$  is to the Gini (Ezcurra, Pascual, Rapún, 2006). Varying the value of  $\alpha$  should contribute to more robust findings.

The final index is found by subtracting an error term,  $\varepsilon(\cdot)$ , which accounts for the information lost by partitioning the data into groups. In order to find the level of within group income inequality, the Gini coefficient of the income inequality between the groups,  $G(\rho^*)$ , is subtracted from the Gini for the overall distribution,  $G(f)$ . The difference is multiplied by the measurement error weight,  $\beta$ . This weight is set equal to one, because one is the largest value that will result in a progressive transfer within groups increasing bipolarization, and a progressive transfer between groups reducing bipolarization (Gradín and Rossi, 2006).

Esteban, Gradín and Ray (2007) also set  $\beta$  to one in their application of the index. Equation (3) shows the final index, and equation (4) is for the Gini index as it is calculated in the error term.

$$(3) \quad P^{EGR}(f, \alpha, \rho^*, \beta) = P^{ER}(f, \alpha, \rho) - \beta[G(f) - G(\rho^*)] \quad (\text{Esteban, Gardín, Ray, 2007})$$

$$(4) \quad G(.) = \frac{1}{2} \left( \sum_{j=1}^n \sum_{k=1}^n |\mu_j - \mu_k| p_j p_k \right) \quad (\text{Esteban, Gardín, Ray, 2007})$$

In calculating the Gini and  $P^{EGR}$  for individuals, the per capita income is used, as is the population of each tract and of the CMA. To calculate polarization and inequality in household income, the mean household income is used rather than the median. Both indexes compare the proportion of total income in the CMA that is earned by a proportion of the entire population. Although the median is a more suitable measure of center for a skewed distribution, as income distributions usually are, it would not allow for an accurate calculation of the total income in each census tract, which is necessary for the computation of these indices. The frequency of households in each tract, group of tracts and in the CMA is used.

Comparing the values of these indices over time will indicate whether polarization has increased. The use of a polarization index should accurately capture the degree of polarization in the income distribution, regardless of the level of inequality. However, the index used here is limited by the necessity that the researcher must select the number of income groups prior to analysis, rather than having this determined endogenously from the data. Examination of the histograms will at least inform this selection. Findings will be assessed with these limitations in mind.

### 3.4 Model of Urban Form

To model the differences in physical urban form across the metropolitan area, the CMA is divided into different urban zones based on the predominant age of the housing stock. This approach to determining urban zones has been used by Bunting and Filion (1996), Walks (2001), and most recently by Holliday and Dwyer (2009). Four urban zones are delineated. As shown in Table 3.1, the inner city is defined as the area of the metropolis that was

predominantly built before 1946, the post-war suburbs are constituted by the area that was mainly built from 1946 to 1970, and the outer suburbs are areas that were primarily built from 1971 onward. Areas on the outskirts of the CMA that have low population densities are designated as urban fringe. Each of these areas of the city was initially developed under a different societal context, including the prevailing urban planning paradigm of the time. Much redevelopment has occurred in the inner city since 1946, but this urban zone remains relatively dense with an urban form that encourages travel by modes other than the automobile. The post-war suburbs consist of largely single detached homes situated within automobile-oriented development, but they were planned to be accessible by public transit and to have a balance of housing forms and tenures. The outer suburbs also have a dispersed urban form, but they are more privately oriented than the post-war suburbs, and tend to have larger homes with more elaborate design features and amenities.

Table 3.1 Urban Zones

Zone	Period of Construction of the Majority of the Housing Stock
Inner City	Before 1946
Post-war suburbs	1946 to 1970
Outer Suburbs	1971 to 2006
Urban Fringe	Population Density <1200 pp./km sq.

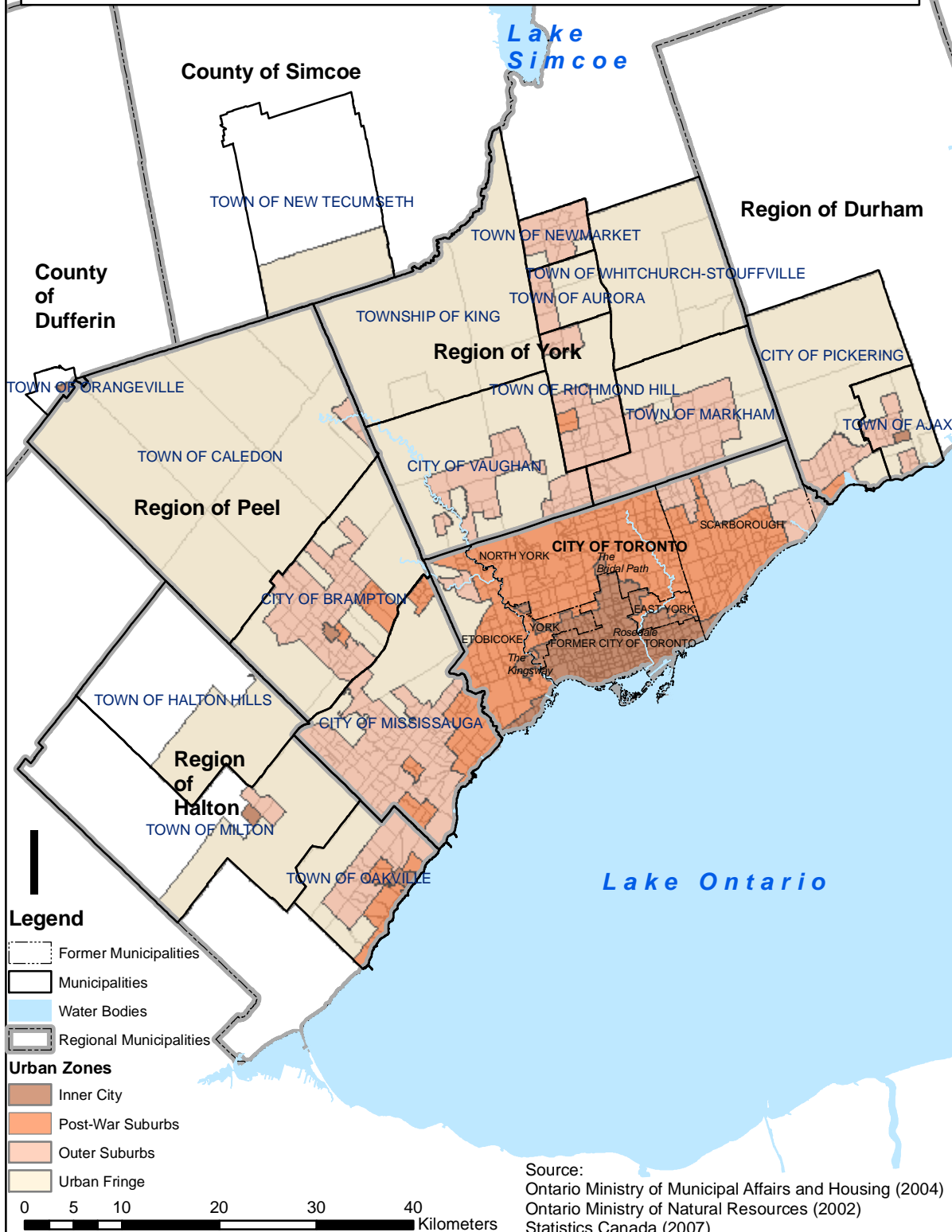
Three rules are used to classify tracts. First, if the percentage of dwellings in a tract that were constructed during a given time period is greater than the percentage in the CMA, then the tract is coded to the appropriate zone. Second, if the percentage of dwellings in the census tract exceeds that of the CMA for more than one time period, then the period in which the highest percentage of tract dwellings were built is used to determine the zone. Third, any areas on the outskirts of the CMA that have population densities less than 1200 people per square kilometer in 2006 are designated as urban fringe. Both the 1971 and the 2006 census data are used to assign tracts to each zone. The inner city is identified from the 1971 data, because with the level of residential redevelopment that occurred over the study period, the distinctions between this zone and the post-war suburbs are clearer in this earlier year. Since the post-war suburbs are defined such that they were entirely built by 1971, the 1971 data is used to

determine their extent. The 2006 data is used to determine the extent of the outer suburbs and the urban fringe.

Some reclassification of census tracts is required in order to delineate contiguous zones. Census tracts that had been initially coded as part of a later period of development than the tracts that surround them on all sides are reclassified. This is mainly necessary in the inner city, where some tracts that are entirely within this zone were initially identified as part of the post-war suburbs, due to extensive redevelopment. A few of the tracts that are surrounded by outer suburban tracts contain a greater proportion of housing built in the postwar period than had been constructed since 1970. These tracts had undergone enough development to increase their population densities past the 1200 person per square kilometer threshold for the urban fringe, but not enough to exceed the percentage of dwellings built since 1971 for the CMA overall. These tracts are classified as part of the outer suburbs. Census tracts that were first coded as urban fringe, but are entirely within an urbanized zone have also been re-coded as part of the surrounding zone. These tracts have extensive employment land uses, reducing the population density, as is the case, for example, with the inner city tracts along the waterfront in 1971. Finally, where data has been suppressed, census tracts are classified based on the surrounding tracts. The urban zones that have resulted from these reclassifications are more or less contiguous, though there are some agglomerations of tracts that were largely developed during the post-war period or before 1946 that have been enveloped by the outer suburbs or that exist in towns on the urban fringe.

The model of urban morphology derived from the classification of tracts based on the predominant age of the building stock can be seen in the map in Figure 3.2. The resulting urban zones overlap with the different political entities of the Toronto metropolitan area, but the urban zones are not perfectly congruent with these districts. Most inner city tracts are within the former City of Toronto, which contains the central business district. Tracts of the Post-War Suburbs are mainly located in the boroughs of Etobicoke, York, North York, East York and Scarborough, which surround the former City of Toronto. Outer suburban tracts are primarily located in municipalities within the Regions of Halton, Peel, York and Durham. The regional municipalities also contain most of the tracts that are classified as urban fringe. The model is used to assess the relationship between social structure and urbanization in two ways. First, by overlaying the borders of urban zones onto maps of social status variables, it is

Figure 3.2 - Model of Urban Form:  
Urban Zones of the Toronto CMA



possible to find the extent to which local spatial variation differs between those areas of the city that developed in different societal contexts, in which different urbanization dynamics prevailed. Second, variables may be calculated for each urban zone and compared with the visually identified patterns from maps of census tract variations.

### 3.5 Measures of Metropolitan Social Structure

Changes in metropolitan social structure will be assessed by analyzing variations in social status indicators in 1971 and 2006. The variables used are intended to be indicative of polarization processes, including changes in the labour market, household composition and immigration. Relative variables, i.e. location quotients, are derived from the raw census data by dividing the proportion of a particular group in a census tract by the proportion of that group in the CMA as a whole, as shown in Equation 5, or the tract average by the CMA average, as shown in Equation 6. In Equation 5,  $n$  is the count of residents with a given characteristic in tract  $i$ , or in the CMA as indicated, and the population is represented by  $z$  for tract  $i$  or the CMA as indicated. In Equation 6,  $\mu$  indicates the average or rate of tract  $i$ , or the CMA as indicated. This approach allows for the identification of areas where the local level of a social status indicator is higher or lower than what would be expected, given the level in the overall metropolitan area. As with the Gini and the  $P^{EGR}$ , these relative measures indicate the evenness with which a particular characteristic is distributed across areal units.

$$(5) X_{relative} = \frac{\left( \frac{n_i}{z_i} \right)}{\left( \frac{n_{CMA}}{z_{CMA}} \right)}$$

$$(6) X_{relative} = \frac{\mu_i}{\mu_{CMA}}$$

Because the inner city and the post-war suburbs were already built up at the start of the study period, it is possible to directly measure changes in social status that occurred in the tracts within these urban zones. For tracts that are the result of dividing tracts in the 1971 CMA, change ratios measure the relative difference between the 1971 proportion that is ascribed to the 2006 tract, and the 2006 proportion derived from the census data that has been collected for that tract. As discussed in section 3.1, this method rests on the assumption that the population is evenly distributed across a census tract. Where tracts have been divided, the 1971 proportion describes a larger geographic area than that the 2006 tract which it is attributed to. Local variation within the 1971 tract is in effect “averaged out” by this method. In these instances, the relative differences compare the 2006 location quotient to the 1971 “averaged out” quotient. This will reduce the precision of the relative differences measured. Similar tract-to-tract comparisons were made by Hunchaski (2007) using data from the 1971 and 2006 census.

Change indexes are calculated for tracts in the inner city and the post-war suburbs by dividing the 2006 relative value by the 1971 relative value, as shown in Equation 7. In order account for zeros in the data set, 0.00001 was added to the numerator and to the denominator of all the change ratios. With this adjustment, change ratios will show either a great increase or decrease in tracts that have a value of zero for a social status indicator in one year.<sup>3</sup> These indexes capture the relative differences between census tracts over time, while accounting for any local changes that are due to CMA wide trends, such as changes in dollar values that are due to inflation.

$$(7) X_{relative,\Delta} = \frac{(X_{relative,2006} + 0.00001)}{(X_{relative,1971} + 0.00001)}$$

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<sup>3</sup> Zeros in the data set should be interpreted with caution as they may actually represent very small populations. Statistics Canada will suppress data on a given variable, if there is a low population of residents with that characteristic in a tract. In choropleth maps for 1971 and 2006, zeros have been included with the lowest interval of data. In maps of statistically significant clusters and outliers, tracts that are adjacent to a zero value may be more likely to appear as part of a cluster, because the presence of the zero would increase the range of surrounding values (Mitchell, 2005). This will affect the appearance of isolated tracts with low levels of a variable. Nonetheless, this will not affect the identification of patterns from agglomerations of tracts with low levels of a variable in the choropleth maps, or where a number of statistically significant clusters of tracts are agglomerated. The zeros in the data set do not appreciably affect the appearance of overall patterns.



However, conceptual changes in the definitions of a number of census categories limit direct comparisons between the census years. The most problematic changes occurred for the classification of occupations and the unemployment rate. Both of these constructs have been explored in past case studies of the Toronto CMA, and this past research will be used as guide in interpreting the current results. Nonetheless, for these variables the assessment of local variation among tracts with respect to the metropolitan averages in each census year is more reliable than longitudinal tract to tract comparisons. Keeping this in mind, the social structure of the metropolitan area in each year will be compared. The following paragraphs will operationalized theoretical constructs of polarization processes and introduce the census based variables that will be used to measure changes in the social structure of the Toronto CMA.

### *Measures of the Spatial Distribution of Income*

The examination of changes in spatial income inequality and polarization across the CMA will establish the direction of these trends. Local variations in the spatial distribution of income, and how these may relate to urban form, is assessed by mapping relative per capita income and relative median household income. To find the relative per capita income of a tract, the per capita income of that tract is divided by the per capita income of the CMA in that census year. While it is necessary to use mean household income in order to calculate the Gini and  $P^{EGR}$ , median household income is used to create the maps. The median is selected for mapping because it is a measure of the centre of a distribution that is not affected by the skew of the distribution, unlike the mean. To find the relative median household income for a tract, the median household income of the tract is divided by the median household income of the CMA in that census year.

## *Occupation*

The occupation of residents is measured to assess changes in the occupational structure that contribute to polarization (Sassen, 2001, Storper and Scott, 2009). Occupational data that are reported in each census are grouped into general occupational categories that describe the types of work that have been shown to be becoming more or less prevalent in metropolitan economies. The derived occupational categories are managers, professionals, service and sales workers, and manufacturing workers. Each derived category is comprised of major groups with similar definitions in each census, as shown in Table 3.2. There are two limitations inherent in the census data on occupation. First, each occupational category that is reported contains a large enough range of occupations to mask earnings polarization within the categories. This means that the occupational variables used here are not necessarily directly related to income polarization. Nonetheless, spatial variation in occupational concentrations can reflect metropolitan social structure, and may be influenced by such processes as gentrification, the decentralization of industrial activities and changes to the occupational structure of the city. Second, the coding of the data has changed over time. In the 1971 census, coding was based on the 1971 Occupational Classification Manual (OCM). In the 2006 census, coding was based on the National Occupational Classification for Statistics 2006 (NOC-S 2006). Because of the change in coding, longitudinal tract to tract comparisons are less reliable than measures of local variation in each year.

Location quotients are found for each occupation variable. The proportion of employed residents in a census tract who work in a given occupational category is divided by the same proportion for the CMA. The location quotients measure the concentration of residents who work in a given occupation in each census tract. A value that is greater than one indicates that the tract concentration is greater than would be expected given the proportion of that occupational group among employed residents in the CMA. A value that is less than one indicates that the tract concentration is less than would be expected given the proportion of that occupational group among employed residents in the CMA. A value of one indicates that the proportion of residents in a tract who are employed in a given occupation matches the same proportion for the overall CMA.

Table 3.2 Occupational Categories

<b>Managers</b>	In 1971, management occupations include data from the 1971 OCM major group 11 - managerial, administrative and related occupations. In 2006, management occupations include data from NOC–S 2006 group A – management occupations. The 1971 group is broader, including administrative occupations that are not included in the 2006 group. Clerical occupations are not included in either category.
<b>Professionals</b>	In 1971, professional occupations include data from the 1971 OCM major groups 27 - technical and related occupations, 31 – medicine and health occupations, and groups 21, 23, 25 and 33 - Technological, social, religious and artistic occupations. In 2006, professional occupations include data from the following NOC–S 2006 categories: C - natural and applied sciences and related occupation, D - health occupations, E - occupations in social science, education, government service and religion, and F - occupations in art, culture, recreation and sport. All census categories include both professional and technical occupations.
<b>Service and sales workers</b>	In 1971, service and sales occupations include data from the 1971 OCM major group 51 - sales occupations, and major group 61 - service occupations. In 2006, service and sales occupations include data from NOC–S 2006 group G - sales and service occupations. This variable includes occupations in retail, wholesale, food and beverage, accommodation and travel, recreation and sport attendants, protective services, child care and home support, as well as supervisors, cashiers, chefs and cooks.
<b>Manufacturing workers</b>	In 1971, manufacturing occupations include data from the 1971 OCM major groups 81 and 82 - processing occupations, and major groups 85 and 83 - machining and related occupations. In 2006, manufacturing occupations include data from NOC–S 2006 category J - occupations unique to processing, manufacturing and utilities.

### *Educational Attainment*

The educational attainment of residents is an indicator of occupational restructuring, as professional and managerial jobs typically require a high level of education, although higher levels of educational attainment many not necessarily translate to higher incomes for those who hold foreign credentials and others who are highly educated, but precariously employed (Picot, 2004, Rose, 1984). Correspondence between the categories of educational attainment reported in each census is inferred from the category definitions. The derived categories of educational attainment are shown in Table 3.2. It should be remembered that the data reported in each censuses represent a relative hierarchy of educational attainment. While the 2006 educational categories appear to be more clear-cut than the ones in 1971, the 2006 Census Dictionary notes that these categories represent a “general rather than an absolute gradient measure of academic achievement” (p. 16). Even in the 2006 data, some people may complete one level of schooling without completing a “lower” level, as with a graduate of a registered apprentice program who has not completed high school. Thus, although there is a distinction between the 1971 census, which reports on the highest grade or year of school attended, and the 2006 census, which reports on the most advanced credential attained, for the purposes of this research it is possible to find reasonably equivalent categories of educational attainment between the two censuses.

There has also been a change in the age of the population for which educational data was collected. While in 2006 educational data was collected for the population fifteen years of age and over, in 1971 educational data was collected for the population five years of age and over. This difference will have resulted in a higher 1971 count of people with less than a high school diploma than would have been if the age range of the population had been fifteen years and over as it was in 2006. To account for this, the population aged five to fourteen is subtracted from the population with no certificate, degree or diploma for each census tract and for the CMA.

As with occupational variables, educational attainment variables are expressed as location quotients. The count of residents with a given level of educational attainment is expressed as a proportion of the tract population who is fifteen years of age and over, and then divided by the same proportion for the CMA. These calculations result in variables that

Table 3.3 Educational Categories

<b>No certificate, degree or diploma</b>	This variable combines 1971 counts of respondents with less than grade 9, and grades 9 to 10 with no other training, with 2006 counts of respondents with no certificate, degree or diploma. In the 1971 census, persons with no schooling, who were not attending full time, were included in the category: "Less than grade 9."
<b>High school diploma</b>	This variable combines 1971 counts of respondents with grades 11 to 13 with no other training, and some university with no other training, with 2006 counts of respondents who have a high school certificate or equivalent.
<b>Post-secondary certificate or diploma</b>	This variable combines 1971 counts of respondents with grades 9 to 13 with other training, and some university with other training, with 2006 counts of respondents who have a certificate or diploma below the bachelor's degree level from an apprenticeship, trades school, college, CEGEP or a university.
<b>University degree</b>	This variable combines 1971 counts of respondents who have a university degree with or without other training, and 2006 counts of respondents who have a certificate or diploma above the bachelor's degree level, or a university degree.

measure the concentration of residents with a given level of educational attainment in each tract. A value that is greater than one indicates that the tract concentration is greater than would be expected given the proportion of residents with a given level of education in the CMA. A value that is less than one indicates that the tract concentration is less than would be expected given the proportion of residents with a given level of education in the CMA. A value of one indicates that the proportion of residents in a tract with a given level of education matches the same proportion for the overall CMA.

### *The Unemployment Rate*

High levels of unemployment have been linked to urban deprivation and polarization (Broadway, 1989, Ley and Smith, 2000, Hamnett, 1996). The unemployment rate is calculated as the total unemployed residents divided by the total labour force times one hundred. In both censuses, labour force data refers to persons 15 years of age and over. There have been conceptual changes in the classifications of the labour force status of respondents, which limit direct comparisons of unemployment rates between the census years. Measures of local variation in each census year are more reliable. In 1971, persons are considered unemployed who “were not working, but who looked for work, or were on temporary lay off” during the week prior to enumeration. Respondents who would have looked for work but for a temporary illness or who believed there was no suitable work available in their community were also considered unemployed in 1971. In 2006, criteria concerning a respondent’s availability for work are part of the classification of the unemployed population and of the labour force population. Respondents who are considered available for work are those who would have been able to start work in the week prior to enumeration, if a job had been available. Some respondents, who would have been counted as unemployed in 1971, are excluded from the labour force in 2006, because they are not considered available for work. Persons are considered to be not available for work if they had a temporarily illness or disability, were in school, already had a job, had personal or family responsibilities, or reported ‘other reasons’ for being unavailable in the reference week. Persons are also not considered available to work who had been in full time attendance at an elementary or secondary school at any time since September of the year prior to the census. The availability criteria make the classification of unemployed status more stringent in 2006 than it was in 1971. On the other hand, the definition of unemployment is broader in the 2006 census, as respondents in 1971 had to have looked for work during the reference week, but in 2006 they had to look for work for in the four weeks prior to the reference week. Finally, in the 2006 census, the labour force includes female farm labourers who did less than 20 hours of unpaid work, while these workers are not included in the 1971 census. In order to arrive at a relative measure, the location quotient is found by dividing the unemployment rate for each census tract by the rate for the CMA. A value that is over one for any tract indicates that the tract unemployment rate is higher than the

CMA unemployment rate. A value that is under one for any tract indicates that the tract unemployment rate is lower than the CMA unemployment rate. A value of one indicates that the unemployment rate in the tract is equal to the CMA unemployment rate.

#### *Average Household Size and Earners per Household*

Household composition is of interest because the increased variability in living arrangements contributes to polarization between increasingly prevalent single-person and dual income households (Bourne and Rose, 2001). The definition of a household is consistent in the 1971 and 2006 censuses. As stated, a household is defined as a single person or a group of related persons, including two or more families, or unrelated persons who share a private dwelling as their usual place of residence. The average household size is the average number of persons who live in a private household, as reported in the census. The average number of income earners per households is a derived variable that is found by dividing the total persons who are fifteen years old and over with employment income by the total number of private households. The data reported in the 1971 census for the earnings of men and women is aggregated to find the total count of people who reported employment income, as was done in calculating per capita income. When considering the link between household income and the ratio of income earners to households, it is important to remember that the ratio cannot show the actually tract distribution of income earners within households. A tract with many single person households and some households in which many members bring in an income may have the same average earners per households as a tract where the typical household as two income earners. The average household income in the first tract may be mid-range to low, while the average household income in the second tract may be mid-range to high. Both averages are expressed as values relative to the respective CMA average in order to find location quotients. The location quotient for the average household size may be interpreted as follows. A value that is over one for any tract indicates that the average household size in that tract is higher than the CMA average household size. A value that is under one for any tract indicates that the average household size in that tract is lower than the CMA average household size. A value of one indicates that the average household size in the tract is equal to the CMA average

household size. The location quotient for the average number of income earners per household may be interpreted in the same way.

### *Immigrant Status*

With high levels of immigration in globalizing cities, income polarization is influenced by the economic integration of newcomers into the metropolitan economy (Sassen, 2001, Baume, 1997, Lo, 2008). As economic integration occurs over time, it is worthwhile to distinguish between recently arrived and more established immigrants in each census year. Spatial disparities among recent immigrants due to different levels of resources upon arrival may dissipate with the length of time that they reside in Canada. Alternatively, disparities may be exacerbated with the polarization of the metropolitan economy. Recent immigrants will be defined as having arrived up to 6 years prior to the census: that is, between 1965 and 1971 in the 1971 census, and between 2001 and 2006 in the 2006 census. More established immigrants will be defined as those that have been in Canada for 6 to 25 years: that is, those that arrived between 1946 and 1971 in the 1971 census, and those that arrived between 1981 and 2006 in the 2006 census. The 2006 definition of an immigrant is slightly broader than the 1971 definition, which distinguishes persons born in Canada from persons born outside Canada. The 2006 census definition specifically refers to people who are or have been landed immigrants in Canada, of which a small number were born in Canada. This should have a small effect on the comparability of the data in the two years of study. The location quotient is calculated in order to measure the concentration of immigrants in a tract. To find the location quotient the proportion of the tract population who immigrated in a given time period is divided by the proportion of the CMA population who immigrated to Canada in that time period. A value that is greater than one indicates that the tract concentration of recent or established immigrants is greater than would be expected given the proportion in the CMA. A value that is less than one indicates that the tract concentration of recent or established immigrants is less than would be expected given the proportion in the CMA. A value of one indicates that the proportion of recent or established immigrants in a tract matches the same proportion for the overall CMA.



### 3.6 Methods Used to Map Metropolitan Social Structure

All calculations are done in Excel and the resulting database is uploaded into ArcMap in order to create maps for each variable in 1971 and 2006 and for the change in each variable over time. Choropleth maps are created in order to visualize spatial variation in each variable across the study area. These maps assign a particular colour to all tracts for which the value of a given variable is within a predetermined range. The same ranges are used in all the maps in this thesis. While choropleth mapping is a common method in social spatial analysis, there does not appear to be a convention on the appropriate ranges with which to group the data. The ranges chosen are similar to those used by Walks (2001) to map census tract change. A broad range of 75% of the CMA average up to just under 125% of the CMA average is chosen as the middle interval. A broad middle range gives a more conservative appraisal of any disparities, because it is more likely for tract ratios to fall within it. In the choropleth maps for 1971 and for 2006, the colour scheme indicates how concentrated a given social status variable is in each census tract with respect to the level in the overall CMA. Reds indicate that the level of the variable in the tract is above the CMA level. For example, reds would indicate that a tract has a high average household income or a high concentration of professionals relative to the overall CMA. Dark red indicates that the level of the variable in the census tract is at least 150% of the CMA level. Salmon indicates that the tract level is from 125% to just under 150% of the CMA level. Yellow indicates that the tract level is relatively close to the CMA level, ranging from 75% of the CMA level, which is somewhat low, to just under 125% of the CMA level, which is somewhat high. Blues indicate that the level of the variable in the tract is below the CMA level. Dark blue indicates that the level of the variable in the tract is less than 50% of the CMA level. Light blue indicates that the census tract level is from 50% to just under 75% of the CMA level. Grey tracts are excluded from the analysis in all maps.

In the choropleth maps of change, the reds indicate an increase in the level of a variable, and blues indicate a decrease. Dark red tracts have an increase of over 50% relative to the CMA from 1971 to 2006. That is, the relative level of the social status indicator in that tract in 2006 is 150% or more of the relative level in 1971. Salmon indicates an increase in the tract from 25% to just under 50% of the 1971 level by 2006, relative to the CMA. A relatively low level of change occurred in the yellow tracts shown in the maps of change. Yellow tracts have

a variable level in 2006 that is 75% to just under 125% of the 1971 level. Dark blue tracts have a decrease of over 50% relative to the CMA from 1971 to 2006. That is, the relative level of the social status indicator in that tract in 2006 is less than 50% of the relative level in 1971. Light blue indicates a decrease in the tract from over 25% to 50% of the 1971 level by 2006, relative to the CMA. Tracts without colour in the maps of change are not included in the urban zones for which change is measured, i.e. the post-war suburbs and the outer suburbs.

The resulting choropleth maps show differences between census tracts, and indicate how a given variable is distributed among tracts. However, the appearance of local patterns is affected by the intervals chosen to group the data (Mitchell, 2005). In order to measure the clustering of tracts with similar values of a given variable, Local Moran's I,  $I_i$ , is used. This index was developed by Anselin (1995) and it has been incorporated into the ArcMap software. Statistically significant spatial clusters are identified, where the value of a variable in a given tract is more similar to the values in contiguous tracts than would be expected due to chance alone. Spatial outliers are also identified where the value of a variable in a given tract is significantly different from the values in neighbouring tracts. Maps of statistically significant clusters and outliers are created for each variable for 1971 and for 2006. The validity of the spatial patterns identified from the choropleth maps is reinforced to the extent that they are congruent with statistically significant clusters.

In the maps of Local Moran's I, statistically significant clusters are shown in orange, and statistically significant outliers are shown in blue. Dark orange tracts are part of clusters with high concentrations of a given variable. Light orange tracts are part of clusters with low concentrations of a given variable. Dark blue tracts are outliers with a high concentration of a given variable. Light blue tracts are outliers with a low concentration of a given variable. Tracts that are not part of statistically significant cluster and that are not significant outliers are not coloured in the maps. Once again, grey tracts are excluded from the analysis.

Local Moran's I,  $I_i$ , is calculated for each census tract in the 1971 and 2006 data using Equation 8:

$$(8) \quad I_i = \frac{(x_i - \bar{x})}{s_i^2} \cdot \sum_j w_{ij} (x_j - \bar{x}) \quad (\text{Mitchell, 2005})$$

where,

$$(9) \quad s_i^2 = \frac{\sum_{j=1, j \neq i}^n w_{i,j}^2}{n-1} - \bar{x} \quad (\text{ESRI, 2010A})$$

and where  $w_{ij}$  is a spatial weighting matrix,  $x_i$  is the value of the variable of interest in tract  $i$ ,  $x_j$  is the value of the variable in the adjacent tract  $j$ ,  $\bar{x}$  is the mean value of the variable. The index compares the value of the variable in the tract of interest and the value of the variable in adjacent tracts to the mean of the variable. In this research, a row-standardized spatial weighting matrix is used, which is based on the number of adjacent census tracts that share an edge or a corner with the target census tract. With row standardization, each target feature is equally represented when the weights are summed, and the influence of neighbouring tracts on a target tract is proportional to the number of neighbours. The use of row standardization in the spatial weighting matrix reduces the exaggeration of differences and similarities that may occur at the edges of the study area where tracts have fewer neighbours. A positive value for  $I_i$  means that the feature is surrounded by features with similar values, and a negative value means that the feature is surrounded by dissimilar values. The value of  $I_i$  must be classified according to the z-score to identify which features are high or low value outliers, or part of a cluster of high or low values.

Statistically significant clusters and outliers are identified as features that are more similar to or different from their neighbours than would be expected by chance. In the test for statistical significance, the null hypothesis is that the observed spatial pattern of the data is not very different for what would be produced most of the time from a random rearrangement of the data. That is, if the values in the data set remained the same, but their spatial positions were changed randomly, most of the time the resulting pattern would not be very different from the observed pattern, and tract of interest would not be remarkably similar or different from the surrounding tracts. The null hypothesis is tested using a normal distribution to approximate the distribution of  $I_i$ . Because the true distribution of a statistic of local spatial association is not known, an expected value and variance are derived from the known elements of the distribution; that is, the number of features, the spatial weighting matrix, and the observed values.

Equations 10 through 16 show how the ArcMap software finds the z-score for the hypothesis test.

$$(10) \quad Z(I_i) = \frac{I_i - E(I_i)}{\sqrt{Var(I_i)}} \quad (\text{Mitchell, 2005})$$

$$(11) \quad E(I_i) = \frac{\sum_{j=1, j \neq i}^n w_{i,j}}{n-1} \quad (\text{Mitchell, 2005})$$

$$(12) \quad Var(I_i) = E(I_i^2) - E(I_i)^2 \quad (\text{ESRI, 2010A})$$

$$(13) \quad E(I_i^2) = A - B \quad (\text{ESRI, 2010A})$$

$$(14) \quad A = \frac{(n - b_{2i}) \sum_{j=1, j \neq i}^n w_{i,j}^2}{n-1} \quad (\text{ESRI, 2010B})$$

$$(15) \quad B = \frac{(2b_{2i} - n) \sum_{k=1, k \neq i}^n \sum_{h=1, h \neq i}^n w_{i,k} w_{i,h}}{(n-1)(n-2)} \quad (\text{ESRI, 2010B})$$

$$(16) \quad b_{2i} = \frac{\sum_{i=1, i \neq j}^n (x_i - \bar{x})^4}{\left( \sum_{i=1, i \neq j}^n (x_i - \bar{x})^2 \right)^2} \quad (\text{ESRI, 2010B})$$

A problem arises because the hypothesis test requires that each data value be independent from the others, but this is not true of the census tract data. Each tract shares a number of its neighbours with other tracts, and so the value for a given tract is used repeatedly when  $I_i$  is calculated for every tract in the data set. Thus, the resulting values of  $I_i$  tend to be correlated. In order to address this issue, a Bonferroni correction is applied to the confidence level (Aneslin, 1995, Mitchell, 2005). The original confidence level is divided by the number of features in the data set to arrive at the adjusted confidence level. Given an initial confidence level of 95%, the Bonferroni correction results in a confidence level of 99.9999%. The critical value for this corrected confidence level is  $\pm 4.043$ . While this accounts for the inherent lack of independence in spatial data, it increases the risk of a Type II error, which would occur if a cluster or outlier that is actually statistically significant is not identified as such. Nonetheless, the Bonferroni correction may lead to more conservative conclusions, because the patterns in the data may actually be more extensive than are found at the higher confidence level.

#### *Measures of Social Status in Urban Zones and Income Brackets*

An examination of the location quotient for each variable at the scale of the urban zone provides further information about how the social structure of the CMA varies with the urban zones at each point in time. These statistics will help to assess the validity of any differences between the urban zones that are identified in the choropleth maps and the maps of statistically significant cluster and outliers. In order to calculate the location quotient for each urban zone, the first step is to aggregate census counts for all tracts in a given zone. From this aggregation, the proportion or average of a variable for a zone may be found, and then expressed relative to the CMA value, as is done for tract level variables. In order to calculate the median household income of an urban zone, the median household income of each tract in the zone is multiplied by the count of households in that tract and then summed for each tract in the zone. The sum is then divided by the total households in the zone. The result is then divided by the median household income of the CMA, so as to express the median household income of the zone as a relative value. In order to calculate the per capita income of an urban zone, the total income for each tract in the zone is summed and then divided by the total population of all tracts in the zone. The result is then divided by the per capita income of the CMA. A similar approach is

taken to calculate the unemployment rate in each zone, the average household size and the average number of income earners per household.

The final stage of the analysis assesses the social status of tracts with different income levels in each census year. Any grouping of income data cannot fully capture changes in the income distribution over the study period, but it can help to uncover the ways that income may be associated with other social status indicators, and provide further information on how income polarization may be associated with changes in the social structure of the metropolis. Tracts are grouped by their median household incomes. High income tracts are those where the median household income is 125% of the CMA median household income and over. Middle income tracts are those where the median household income ranges from 75% to less than 125% of the CMA median. Low income tracts are those where the median household income is less than 75% of the CMA median. Per capita income increases progressively across the resulting household income ranges. These ranges are similar to those chosen for the choropleth maps. The analysis will show how the social status of tracts with relatively high, moderate, or low incomes has changed over time, and this may indicate how social change is related to income disparities across metropolitan space.

## 4.0 Findings

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### 4.1 Income Histograms, Quantiles, and Indexes of Inequality and Polarization

Measures of the income levels of census tracts indicate that disparities have increased over the study period. In the following histograms, Figures 4.1 to 4.3, tract per capita incomes are expressed as ratios to the CMA income, and the percentage of tracts at each income level is shown. Examination of the histograms for per capita income shows that over time the distribution has become flatter and more dispersed. In 1971 the mode of the distribution is at 90% of the CMA per capita income. In 2001, there is a greater proportion of the CMA population in the lower tail of the per capita income distribution than there is in 1971. Although comparisons are limited due to changes in data collection methods, by 2006 there is a secondary peak at around 70% of the CMA per capita income. It appears that polarization has increased, because the population is becoming re-concentrated in tracts with lower income levels as the population of tracts with per capita incomes on par to the CMA level has declined, and it appears that the population has increased in the right tail of the distribution, where there are tracts with very high incomes relative to the CMA per capita income (Estiban and Ray, 2004).

The histograms in Figures 4.4 to 4.6 show tract median household incomes relative to the CMA median household income, and the percentage of tracts at each income level. Similar changes have occurred in the household income distribution as have occurred in the per capita income distribution, again resulting in a more platykurtic, skewed and more dispersed distribution over time. However, it is difficult to say whether the level of polarization in tract median household income has increased. The histogram for household income in 1971 is clearly bimodal, while the histograms in 2001 and 2006 contain one mode as well as secondary and tertiary peaks. In 1971 the modes of the distribution are at 90% and 110% of the CMA median household income. In the later census years the mode is at 80% of the CMA median household income. In 2001 there appears to be a secondary peak at 110% of the CMA median household income, and a tertiary peak at 130% of the CMA median household income. In 2006 there is a secondary peak at 100% of the CMA median household income and a tertiary peak at 120% of the CMA median household income. The shift in tracts from the mode at 90% of the

CMA household income in 1971 to 80% of the CMA household income in 2001 and 2006 would contribute to an increase polarization, because the mode has moved further away from the middle of the distribution, but this depends on what has occurred at the high end of the distribution (Estiban and Ray, 2001). It is less clear whether the shift in tracts from 110% of the CMA median household income in 1971 to 130% of the CMA median household income in 2001 would increase polarization, because the resulting peaks have similar proportions of the population (Estiban and Ray, 2001). The change between the 1971 and the 2006 distribution is also ambiguous. The population has become re-concentrated in tracts with median household incomes that are further away from the CMA median household income, which would increase polarization. However, the secondary peak at 100% of the CMA median household has a similar proportion of the population to the tertiary peak at 120% of the CMA household income. It is not clear whether the level of polarization in the distribution of tract median household income has increased or decreased. Nonetheless, the histograms show that the distribution of both census tract per capita income and median household income have become more spread out from the middle and more positively skewed, as census tracts are becoming re-concentrated at lower income levels.

Quantiles based on tract per capita income, mean household income and median household income are shown in Tables 4.1 to 4.3. The proportion of the CMA population in each quantile of per capita income is measured, and the proportion of the total CMA households in each quantile is measured for mean and median household income. For all income measures from 1971 to 2006, the proportion of the population and of total households increased in the lowest income quantile, where tract average incomes are less than 75% of the CMA average, and decreased in the middle income quantile, where tract average incomes range from 75% up to 125% of the CMA average. With the exception of median household income, from 2001 to 2006 there was also a decline in the proportion of the population and of total household in middle income tracts, and the increase in these proportions in low income tracts. The proportion of CMA households in tracts with less than 75% of the CMA median household income increased from 10% of CMA households in 1971 to 22% of CMA households in 2001, and then remained at 22% of CMA households in 2006. The proportion of the CMA population that resides in tracts with 125% of the CMA per capita income and over increased slightly from 15% in 1971 to 17% in 2001, and then declined back to 15% in 2006. The



proportion of CMA households that reside in tracts with high mean and median household incomes increased from 1971 to 2006. The proportion of CMA households in tracts with high mean household incomes declined from 18% in 2001 to 17% in 2006, although this is higher than the 11% of CMA households that in 1971 resided in tracts with high mean household incomes. The steady increase in the proportion of the CMA population who reside in tracts with relatively low per capita incomes and the decrease in the proportion of the population who reside in tracts with mid-range incomes are indications that polarization has occurred. However, the proportion of the CMA population who reside in tracts with high per capita incomes has remained fairly steady, which suggests that polarization has not occurred. The apparent increase in tracts in the right tail of the histogram of per capita income seems to be due to a spreading-out of the population at higher income levels, rather than a re-concentration of population towards the high end of the income range. The quantiles for mean and median household income more clearly indicate that that spatial polarization is occurring in household income.

**Table 4.1 Population Shares by Tract Per Capita Income  
Relative to the CMA**

Year	Percentage of CMA Per Capita Income		
	<75%	75% to <125%	125% plus
1971	14%	71%	15%
2001	27%	51%	17%
2006	31%	50%	15%

Source: Statistics Canada (1971B, 2003, 2008B)

**Table 4.2 Share of Total Households by Tract Median Household Income  
Relative to the CMA**

Year	Percentage of CMA Median Household Income		
	<75%	75% to <125%	125% plus
1971	10%	78%	12%
2001	22%	48%	25%
2006	22%	47%	26%

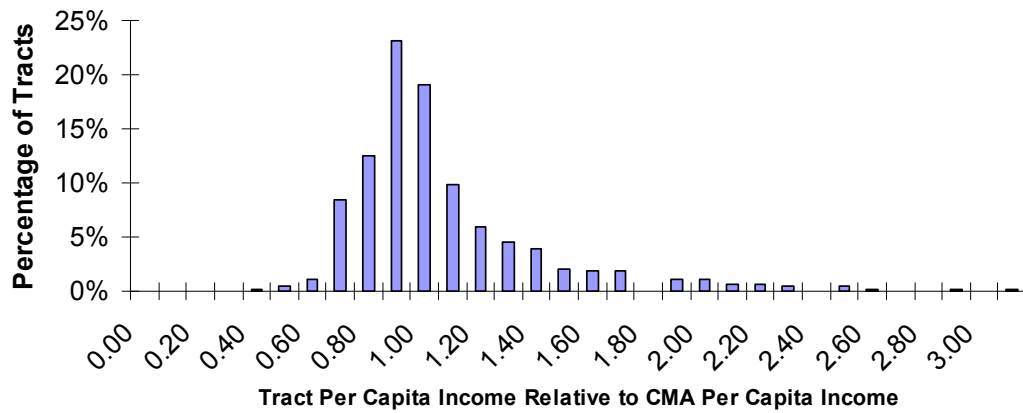
Source: Statistics Canada (1971B, 2003, 2008B)

**Table 4.3 Share of Total Households by Tract Mean Household Income  
Relative to the CMA**

Year	Percentage of CMA Mean Household Income		
	<75%	75% to <125%	125% plus
1971	8%	80%	11%
2001	28%	49%	18%
2006	31%	47%	17%

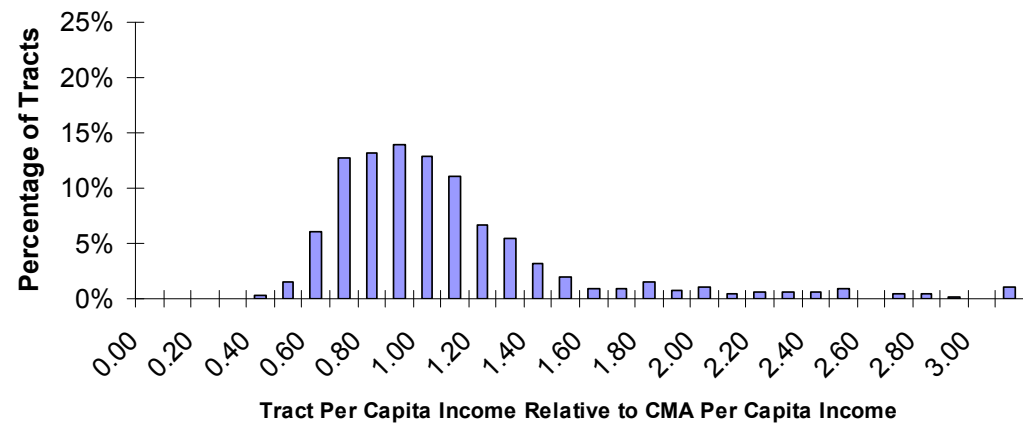
Source: Statistics Canada (1971B, 2003, 2008B)

**Figure 4.1 1971 Per Capita Income**



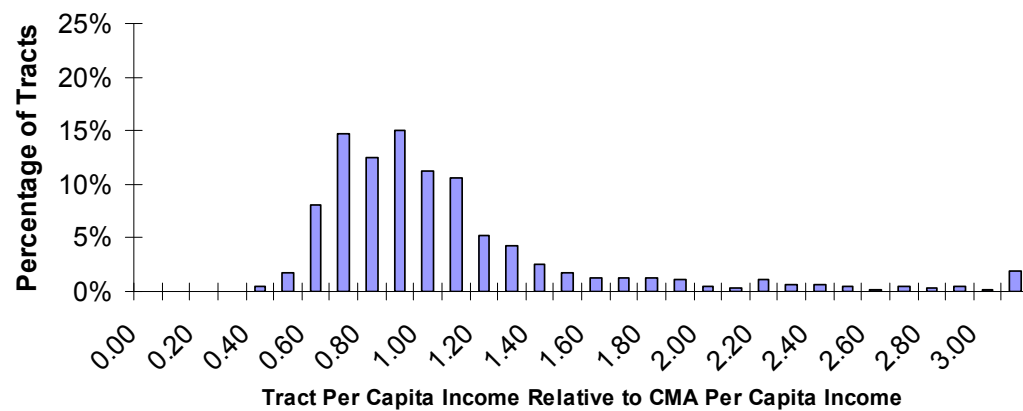
Source: Statistics Canada (1971B)

**Figure 4.2 2001 Per Capita Income**



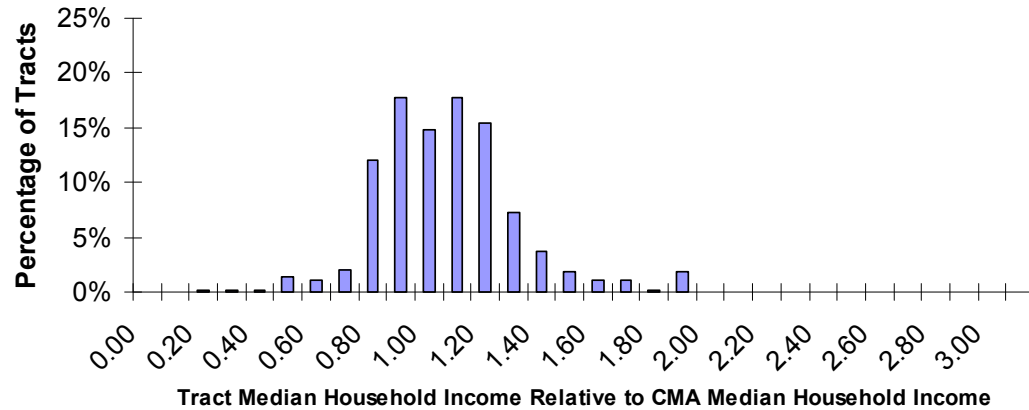
Source: Statistics Canada (2003)

**Figure 4.3 2006 Per Capita Income**



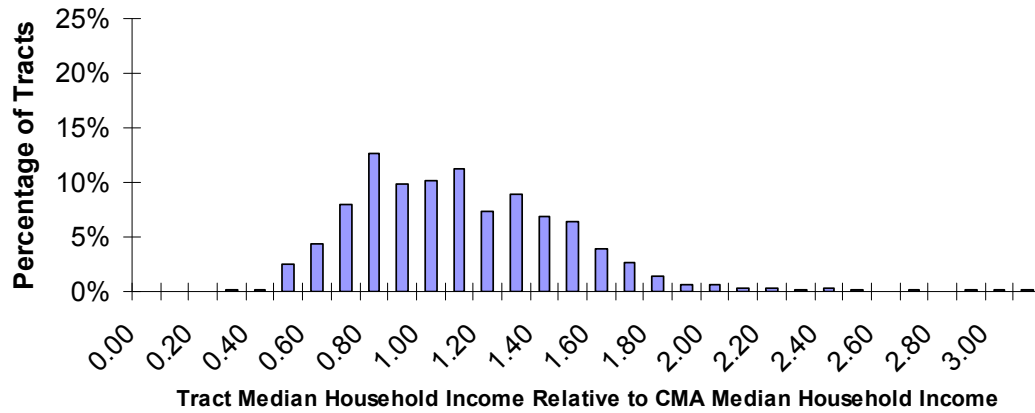
Source: Statistics Canada (2008B)

**Figure 4.4 1971 Median Household Income**



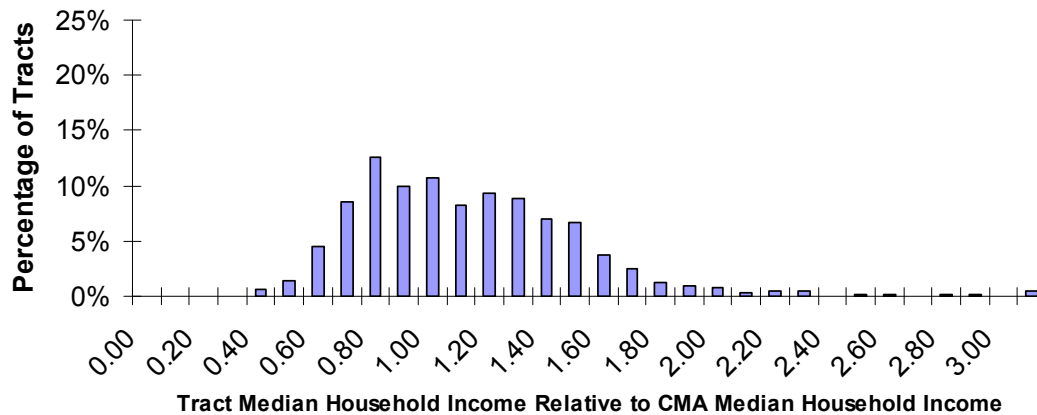
Source: Statistics Canada (1971B)

**Figure 4.5 2001 Median Household Income**



Source: Statistics Canada (2003)

**Figure 4.6 2006 Median Household Income**



Source: Statistics Canada (2008B)

Calculation of the Gini index and the polarization index show that both the level of inequality and polarization among census tracts has increased for both household and per capita income (Tables 4.4 to 4.9). The Gini index for per capita income increased from 0.156 to 0.214, representing an increase of 37%, and the Gini index for household income increased from 0.135 to 0.213, representing an increase of 58% from 1971 to 2006. Part of this increase is due to changes in data collection methods, but the level of income inequality also increased by 24% from 1971 to 2001 for per capita income, and by 44% over the same time period for household income. Census tracts were divided into two and three groups for the calculation of the polarization index. The percentage of income variation concealed within the groups was greater when either distribution was divided into two groups than for three groups as shown in the last rows of Tables 4.4 and 4.7. This suggests that the income distribution has not become completely bifurcated over the study period, as can also be seen in the histograms. The sensitivity of the index to the income variation within the groups was adjusted by setting alpha to 1, 1.3, and 1.6. Polarization increased from 1971 to 2006 for all values of alpha, and when the distribution was divided into two and three groups. From 1971 to 2001, the level of polarization within the per capita income distribution declined by 7% for the alpha value of 1.6 in the two group case, but increased in all other instances. For per capita income, the lower the value of alpha, the greater the increase in polarization, no matter the grouping of the data. Because the polarization behaves more like the Gini index, the closer that alpha is to one (Ezcurra, Pascual, Rapún, 2006), this suggests that inequality has increased more than polarization has for per capita income.<sup>4</sup>

Findings for household income are more nuanced. When the household income distribution is divided into two groups, the findings show that the greatest increase in  $P^{EGR}$  occurs when alpha equals 1.6. When the household income distribution is divided into three groups the greatest increase in  $P^{EGR}$  from 1971 to 2001 occurs when alpha equals 1, but the greatest increase from 1971 to 2006 occurs when alpha equals 1.3. The increase in polarization in the two group case is greater than the increase in inequality as shown by the Gini for 1971 to 2001 and equal to or greater than the increase in the Gini for 1971 to 2006. However, the increase in

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<sup>4</sup> In an earlier calculation, tracts that could not be associated with data in both years were *not* dropped from the data set. The earlier calculation included all tract data that was reported in the census form 1971 and 2006. When this was done, it was found that the polarization increased *more* than inequality, for two and three groupings of the data was grouped and for each type of income measured.

polarization in the three group case is less than the increase in inequality as shown by the Gini index for the two time periods. It may be said that the distribution of tract median household income has become more polarized and more unequal over the study period.

The effect of household formation on mitigating income polarization and inequality is clear in 1971 and in 2006. For both census years, the polarization index at all values of alpha is less for household income than it is for per capita income, and the Gini index for household income is also less than for per capita income. The relationship is less clear in 2001, when the household income distribution is more polarized than the per capita income distribution in the two group case and in the three group case. The Gini is also higher for household income than for per capita income in 2001. Nonetheless, for all polarization indexes and the Gini index between 1971 and 2001, and between 1971 and 2006, polarization and inequality increased more for household income than it did for per capita income. It appears that changes in household composition in the post-Fordist period are exacerbating disparities among individuals.

Table 4.4 Polarization in Per Capita Income						
	Two Group Case			Three Group Case		
	1971	2001	2006	1971	2001	2006
$P^{EGR}, \alpha = 1$	0.062	0.069	0.080	0.065	0.077	0.089
$P^{EGR}, \alpha = 1.3$	0.043	0.045	0.054	0.042	0.048	0.057
$P^{EGR}, \alpha = 1.6$	0.028	0.026	0.033	0.025	0.027	0.035
Concealed Variation	29.86%	30.56%	29.74%	13.98%	14.26%	13.14%
Source: Statistics Canada (1971B, 2003, 2008B)						

Table 4.5 Inequality in Par Capita Income					
	1971	2001	2006	2001/1971	2006/1971
$G(f)$	0.156	0.194	0.214	1.24	1.37
Source: Statistics Canada (1971B, 2003, 2008B)					

Table 4.6 Change in $P^{EGR}$ for Per Capita Income 2001 divided by the 1971 base year, and 2006 divided by the 1971 base year				
	Two Group Case		Three Group Case	
	2001/1971	2006/1971	2001/1971	2006/1971
$P^{EGR}, \alpha = 1$	1.11	1.29	1.18	1.37
$P^{EGR}, \alpha = 1.3$	1.05	1.26	1.14	1.36
$P^{EGR}, \alpha = 1.6$	0.93	1.18	1.08	1.40
Source: Statistics Canada (1971B, 2003, 2008B)				

Table 4.7 Polarization in Household Income						
	Two Group Case			Three Group Case		
	1971	2001	2006	1971	2001	2006
$P^{EGR}, \alpha = 1$	0.050	0.075	0.079	0.058	0.079	0.087
$P^{EGR}, \alpha = 1.3$	0.033	0.049	0.052	0.037	0.049	0.056
$P^{EGR}, \alpha = 1.6$	0.019	0.029	0.031	0.022	0.028	0.033
Concealed Variation	31.40%	29.27%	29.92%	14.00%	13.77%	13.66%
Source: Statistics Canada (1971B, 2003, 2008B)						

Table 4.8 Inequality in Household Income					
	1971	2001	2006	2001/1971	2006/1971
$G(f)$	0.135	0.195	0.213	1.44	1.58
Source: Statistics Canada (1971B, 2003, 2008B)					

Table 4.9 Change in $P^{EGR}$ for Household Income 2001 divided by the 1971 base year, and 2006 divided by the 1971 base year				
	Two Group Case		Three Group Case	
	2001/1971	2006/1971	2001/1971	2006/1971
$P^{EGR}, \alpha = 1$	1.50	1.58	1.36	1.50
$P^{EGR}, \alpha = 1.3$	1.48	1.58	1.32	1.51
$P^{EGR}, \alpha = 1.6$	1.53	1.63	1.27	1.50
Source: Statistics Canada (1971B, 2003, 2008B)				

## 4.2 Maps of the Spatial Distribution of Income

The spatial distribution of per capita income among census tracts shows a pronounced trend towards centralization. Figure 4.7 and Figure 4.8 show the choropleth maps for per capita income in 1971 and 2006, respectively. In 1971, numerous tracts with per capita incomes that are 75% of the CMA per capita income and lower are located in the inner city. These form a 'U' shape, starting at the waterfront and extending toward the northwest and northeast of this zone along the rail corridors. This areal 'U' shaped pattern has been identified in previous studies with a range of variables from individual and household income to the concentration of recent immigrants (Walks, 2001, 2010, Hulchanski, 2007, United Way of Greater Toronto and The Canadian Council on Social Development, 2004, Lo, 2008). Tracts with per capita incomes of at least 125% of the CMA per capita income are amassed in the north of the inner city and south of the post-war suburbs, around the western border of the inner city, and along the waterfront in Oakville and Mississauga. By 2006, the relatively low-income tracts at the southern tip of the 'U' have thinned out, and the relatively high-income agglomerations of tracts that were present in 1971 have expanded on the north and western borders of the inner city. Per capita incomes are more than 25% higher than the CMA per capita income in tracts across the inner city waterfront. The sectors with low relative per capita incomes to the east and west of the city are still apparent in 2006, but these are in a more decentralized location. The eastern sector begins in the post-war suburbs and the western sector starts in the northwest of the inner city, and both extend into the outer suburbs and the fringe. The western sector is more prominent than the eastern one, which is may be due to the narrowness of the area between the affluent Young Street corridor and the western rail lines. The outer suburbs and urban fringe in 2006 are peppered with both high and low income tracts, although tracts with low relative per capita incomes are particularly numerous in parts of Markham, Mississauga and Brampton. Figure 4.9 depicts the choropleth map of per capita income change, and shows that per capita incomes increased by at least 50% relative to the CMA per capita income in tracts across the inner city. Many of the tracts that have high per capita incomes in 2006 experienced substantial income increases over the study period. Most of the high income tracts in the post-war suburbs have maintained or increased their per capita incomes, in comparison to the CMA per capita income. At the same time, many of the tracts in

the post-war suburbs that have relatively low incomes in 2006 saw their incomes stagnate or fall, contributing to increased local disparities in this zone. As can be seen in Figure 4.10 and Figure 4.11, mapping the Local Moran's  $I_i$  for per capita income confirms the entrenchment of high income agglomerations to the north of the inner city and around its western border, although these have shifted slightly south. The high income cluster along the Mississauga waterfront is no longer present in 2006, and there are no high income clusters in the outer suburbs or fringe. By 2006, none of the inner city low-income clusters that were present in 1971 remain.

The maps of median household income show a less pronounced trend of income centralization and a stronger trend toward decentralization. Figure 4.12 and 4.13 show that by 2006 tracts with less than 75% of the CMA median household income were no longer massed in the south of the inner city, and have appeared in the east and west of this zone and throughout the post-war suburbs in a dispersed pattern. There are more relatively high-income tracts in the inner city in 2006 than there were in 1971. These are located along the waterfront, as well as in the north and the far west, adjacent to tracts that have been high-income since 1971. In 2006, the outer suburbs and fringe are the location of numerous tracts with household incomes over 125% of the CMA median household income. However, in both years there are also a number of tracts with median household incomes of less than 75% of the CMA median that are scattered across the newly constructed suburbs; that is, the post-war suburbs in 1971 and the outer suburbs in 2006. Figure 4.14 shows that while there are a number of tracts where the relative median household income has fallen by over 25% in the inner city, relative median incomes have risen by at least as much in many more tracts. Rising household incomes follow along a north-south central corridor that stretches from persistently affluent tracts in the north of the inner city towards the downtown. Tracts where relative median household incomes have risen by at least 25% are also present in the far west of the inner city and in the east. Many of the relatively low income tracts in the post-war suburbs in 2006 experienced a decline of at least 25% of their 1971 value. There are also a number of tracts in the post-war suburbs that maintained their high relative median income levels and incomes increased in some, but the overall picture is one of declining household incomes. Maps of  $I_i$  in Figures 4.15 and 4.16 support these findings. In the inner city, fewer clusters with low relative median household incomes can be found in 2006 than in 1971, and high income clusters have appeared in the



north and west of this zone. In contrast, there are fewer high income clusters in the post-war suburbs by the end of the study period. The numerous tracts in the post-war suburbs in 2006 with relatively low median household incomes, as seen in the choropleth map in Figure 4.13, form only two statistically significant spatial clusters in Figure 4.16. It appears that as the location of relatively low income tracts has shifted away from the city center, they have become more dispersed. In 2006, the outer suburbs and urban fringe have a number of high income clusters, including a number of new clusters in York Region and the wealthy waterfront communities in Oakville and Mississauga that are present in both study periods.

Findings from maps of relative per capita and median household income show that both income measures have become more uneven across the urban zones over the study period. However, there are three findings that may be inconsistent with this interpretation. First, sectors for per capita income run across the boundaries of the urban zones. Second, for both income measures there are clusters that overlap the boundaries of urban zones. Third, in 2006 patterns of relative median household income in the older inner city and post-war suburbs are similar to each other, but markedly different from patterns in the newer outer suburbs and urban fringe. Findings suggest that individual and household incomes have diverged between each of the urban zones, but these are not the only spatial patterns apparent in the maps.

The spatial sectors of low per capita income tracts that cut across urban zones are apparent in maps for both years. In the tracts along these sectors there have been increases in per capita income in the inner city and decreases per capita income in the post-war suburbs. These sectors were contained within the inner city along the eastern and western rail lines in 1971. By 2006, the western sector had expanded to include tracts in the post-war suburbs of York and Etobicoke, and arguably parts of the outer suburbs in Peel Region. The eastern sector has also become more extensive and stretches across the post-war suburbs of East York and Scarborough and the outer suburbs of York Region just into the urban fringe. Few statistically significant low income clusters are present within the sectors, which suggests that the extent of the sectors is influenced by the intervals chosen to categorise income on the choropleth maps. Despite this fact, the appearance of the sectors indicates a tendency for relatively low income tracts to be located adjacent to each other in these areas of the city. Closer examination of these sectors belies changes within each urban zone. In the inner city, many of the low income tracts that formed the sectors in 1971 are no longer present in 2006.

Many of the tracts in the post-war suburbs that form the low income sectors in 2006 had per capita incomes close to the CMA level in 1971. Even along these sectors, the rising relative tract per capita income in the inner city and the decline in the post-war suburbs are part of a centralization of income. A further form of variation between the urban zones is how distinct the sectors appear in different parts of the city. In 2006, the sectors are less clear in the outer suburbs and urban fringe, than they are in the inner city and the post-war suburbs.

High income clusters that straddle the boundaries of urban zones do not negate zonal variations. There is a great degree of complexity in the social structure of any city. Local exceptions to the generalizations made in any spatial model may be expected, even when census tracts averages are used to simplify real-life local variations for analysis (Hackworth, 2005). In both years and for both income measures, there are high income clusters that include tracts in the north and west of the inner city and the south of the post-war suburbs. These clusters are more extensive in 2006. Affluent agglomerations are located around such neighbourhoods as the Bridle Path, Rosedale and the Kingsway that were initially developed as exclusive garden suburbs in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. Their presence appears to have attracted further high income residents to homes in the surrounding areas, entrenching these agglomerations within the metropolitan social structure. This is not to say that such a process necessarily occurs in a given neighbourhood, and there are many examples of pre and early twentieth century suburbs that began wealthy and declined over time. Parkdale, a well known example in Toronto, was an affluent streetcar suburb in the early twentieth century, but upper income residents moved out of the area in the mid twentieth century, and many of their stately homes were converted to rooming houses.

Third, the inner city and the post-war suburbs have become more alike in terms of household income, while in 2006 the outer suburbs and urban fringe are wealthier than the more central zones. Declining relative household incomes in tracts across the post-war suburbs and increasing relative household incomes in tracts of the inner city have made these zones more similar. Moreover, in Figure 4.13 for 2006 there is no clear break between the outer suburbs and urban fringe as both have an extensive number of tracts with relatively high household incomes. Nonetheless, distinctions between each zone are apparent. While tracts where the median household income increased by at least 25% tend to be located in the inner city, tracts where the median household income decreased by over 25% tend to be located in

the post-war suburbs. A further distinction is that in 2006 the outer suburbs have more tracts with mid-range and low median household incomes than the urban fringe. Thus, there are numerous differences between the urban zones with respect to median household income.

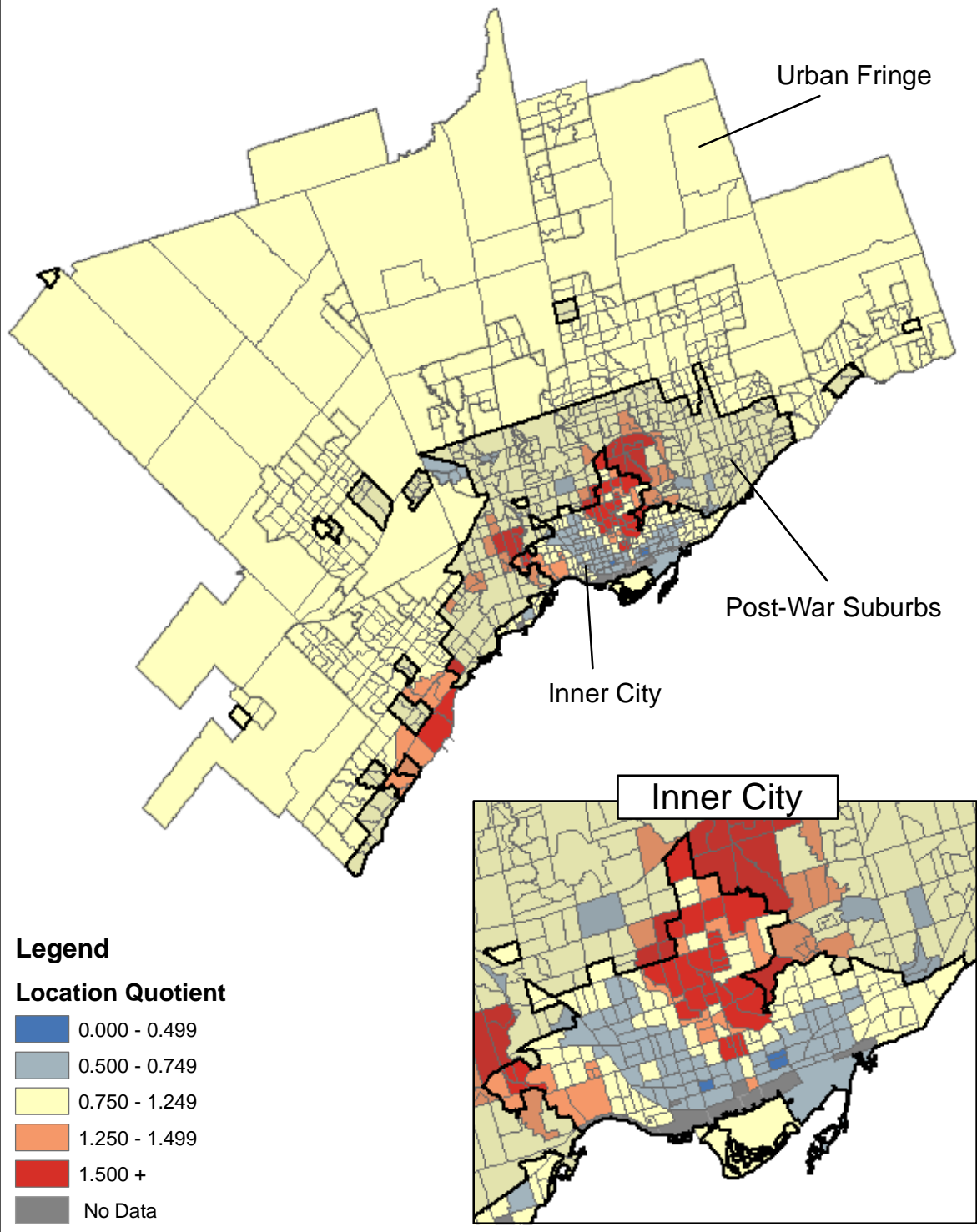
Maps indicate how rising polarization and inequality among tracts is spatially distributed across the CMA. The spatial variation of income shows marked changes across urban zones, even given the presence of clusters and sectors that overlap the boundaries of the zones, and similarities between the 2006 urban zones in terms of median household income. In the inner city, there have been increases in per capita income in most census tracts. The median household income of many tracts has also risen, although the increase is less pronounced, which is to be expected with the relatively small average household sizes in this zone, as will be discussed in section 4.3. Per capita and household incomes declined in many of the tracts in the post-war suburbs, but incomes have also risen in some tracts, particularly in those that were already affluent in 1971, and this has increased the disparities in this zone. There has been a change in the nature of the socioeconomic advantage of the outermost suburbs of the CMA. In 1971, most of the tracts in the post-war suburbs have relative per capita and median household incomes that are in the middle range. In 2006, the maps show that tracts in the outer suburbs tend to have mid-range to high relative median household incomes, but mid-range to low relative per capita incomes. By 2006, the outer suburbs appear to be polarized in terms of per capita income, despite having generally high household incomes. In addition, it is interesting that in 2006 high income tracts form more statistically significant clusters than low income tracts. This could be because incomes increased in tracts in the dense inner city and declined in tracts in the post-war suburbs, where the urban form is more dispersed (Bunting and Filion, 1999).

Overall, changes between the urban zones indicate that there has been a simultaneous centralization and decentralization of income. The spatial distribution of per capita income has become more centralized over the study period, as the location of high income tracts has shifted towards the inner city. The spatial distribution of household income has also become more centralized, although this trend is less pronounced than the simultaneous decentralization of household income that has occurred as the suburbs have expanded and households in the urban fringe have become more affluent. It appears that as the locus of metropolitan poverty has shifts from the inner to the post-war suburbs, low income tracts are becoming more

spatially dispersed. Metropolitan polarization and rising income inequality has been accompanied by greater unevenness in the spatial distribution of income across the urban zones.

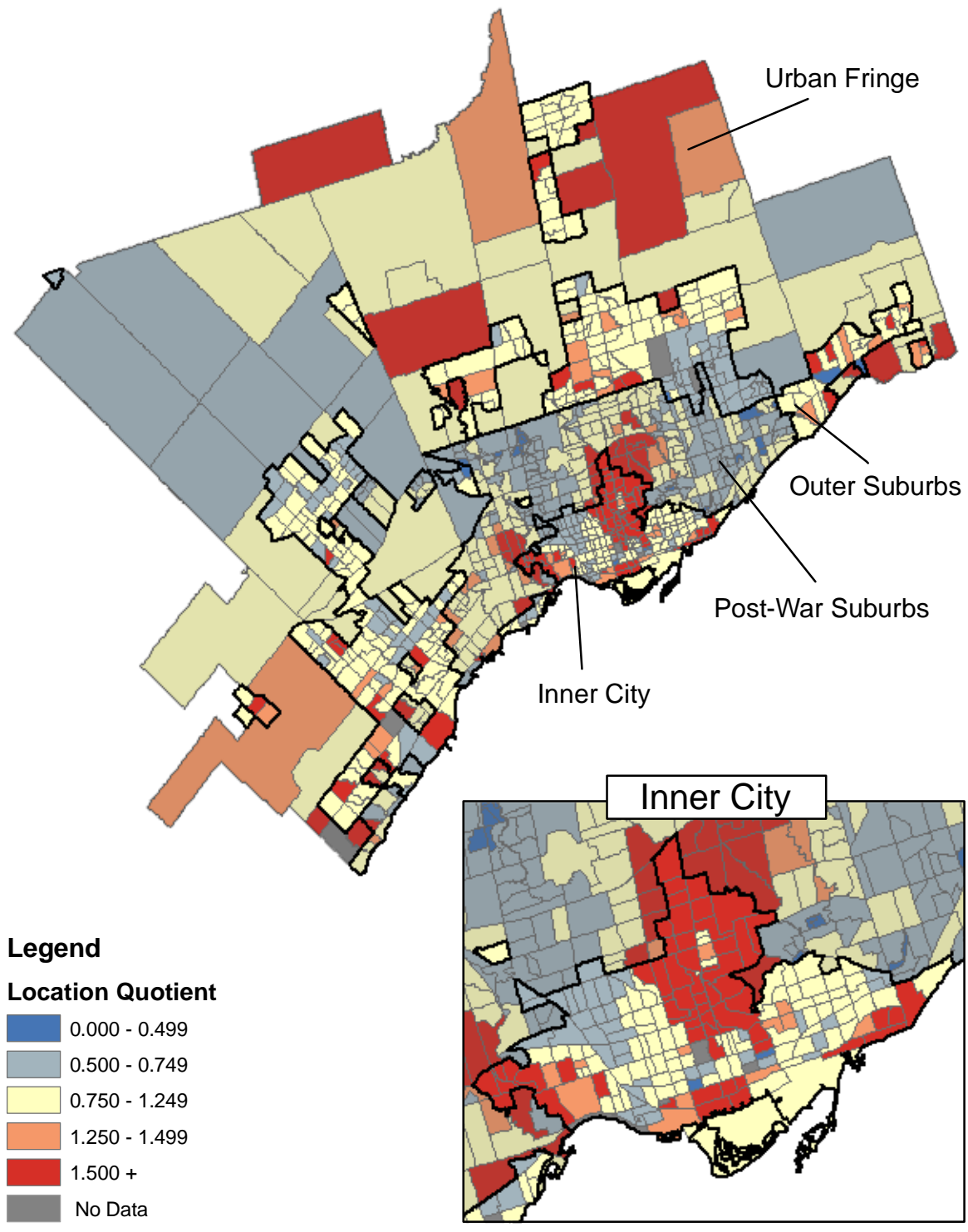
Source: Statistics Canada (2007, 1971B)

Figure 4.7 - 1971 Census  
Per Capita Income:  
Location Quotient



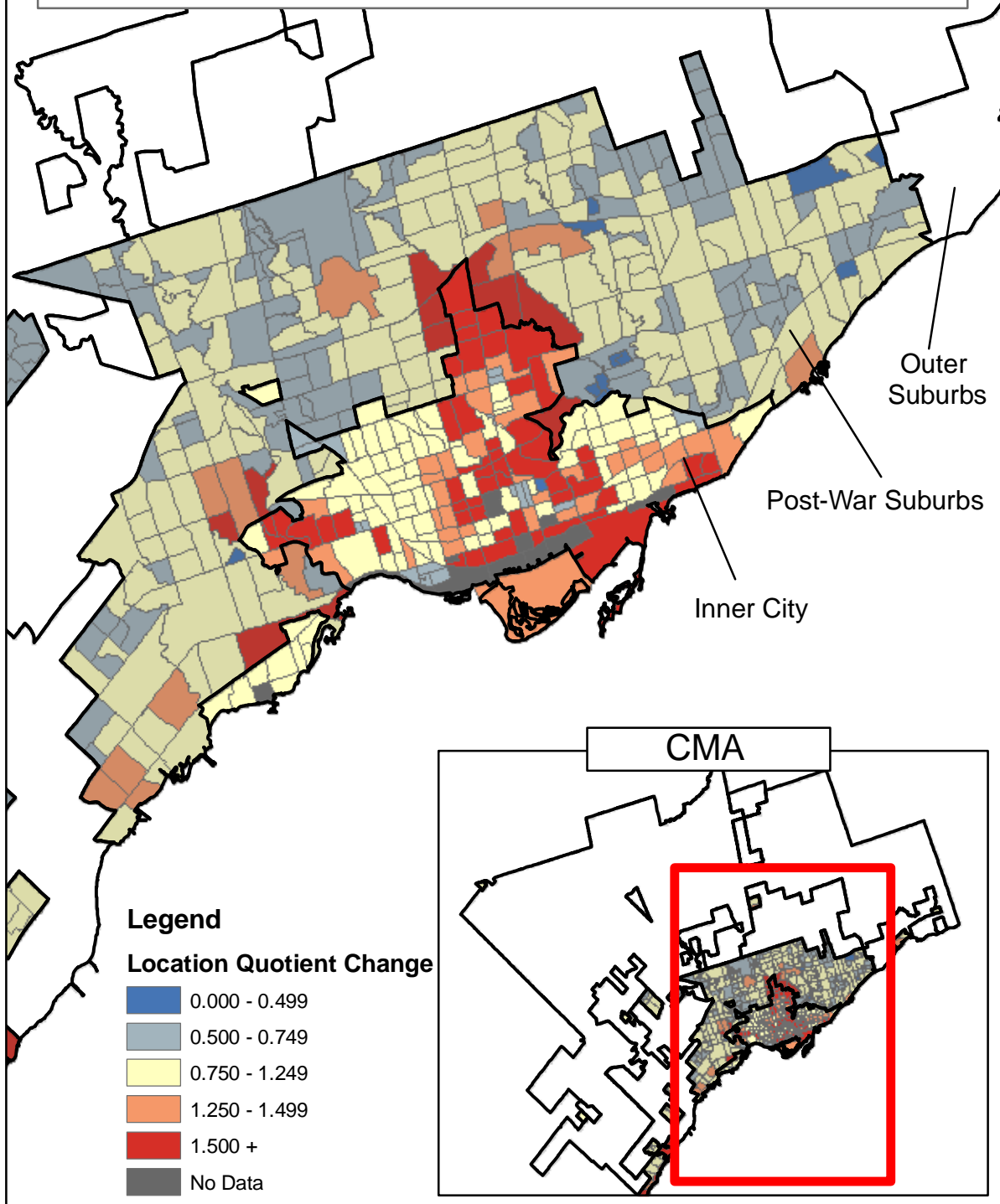
Source: Statistics Canada (2008B, 2007)

Figure 4.8 - 2006 Census  
Per Capita Income:  
Location Quotient



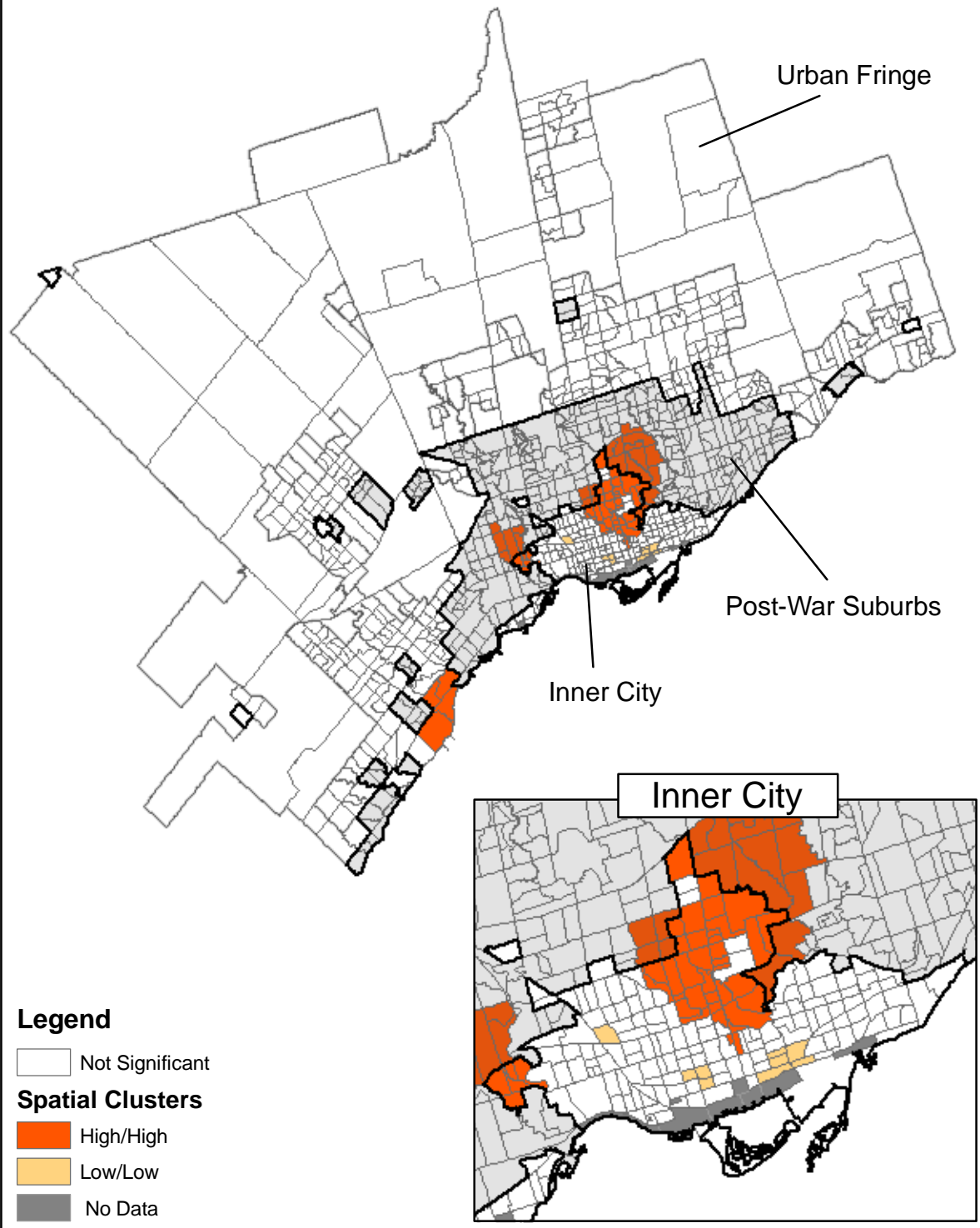
Source: Statistics Canada (2008B, 2007, 1971B)

## Figure 4.9 - 1971 to 2006 Censuses Per Capita Income: Change in Location Quotient



Source: Statistics Canada (2007, 1971B)

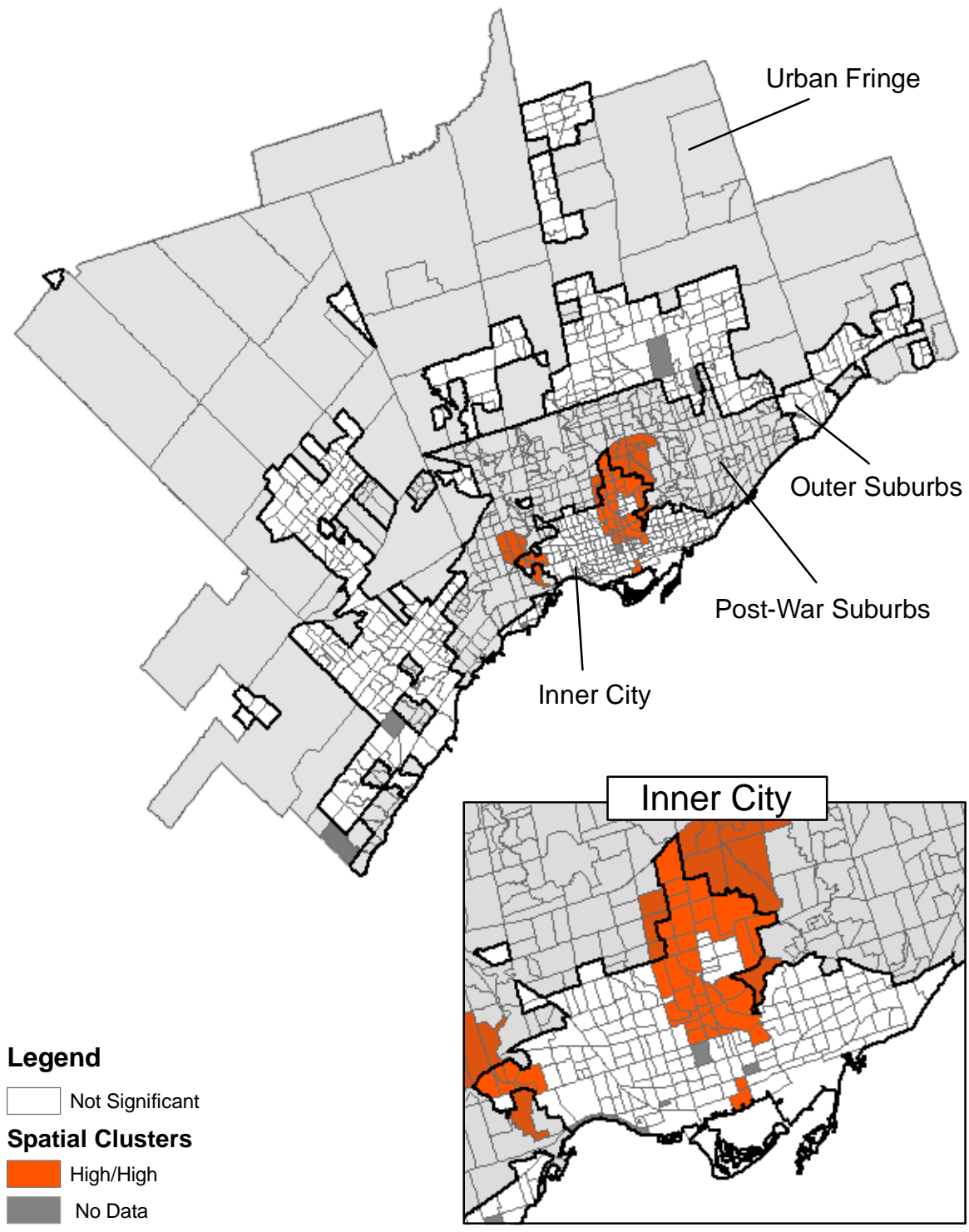
Figure 4.10 - 1971 Census  
Per Capita Income:  
Local Moran's I of Location Quotient





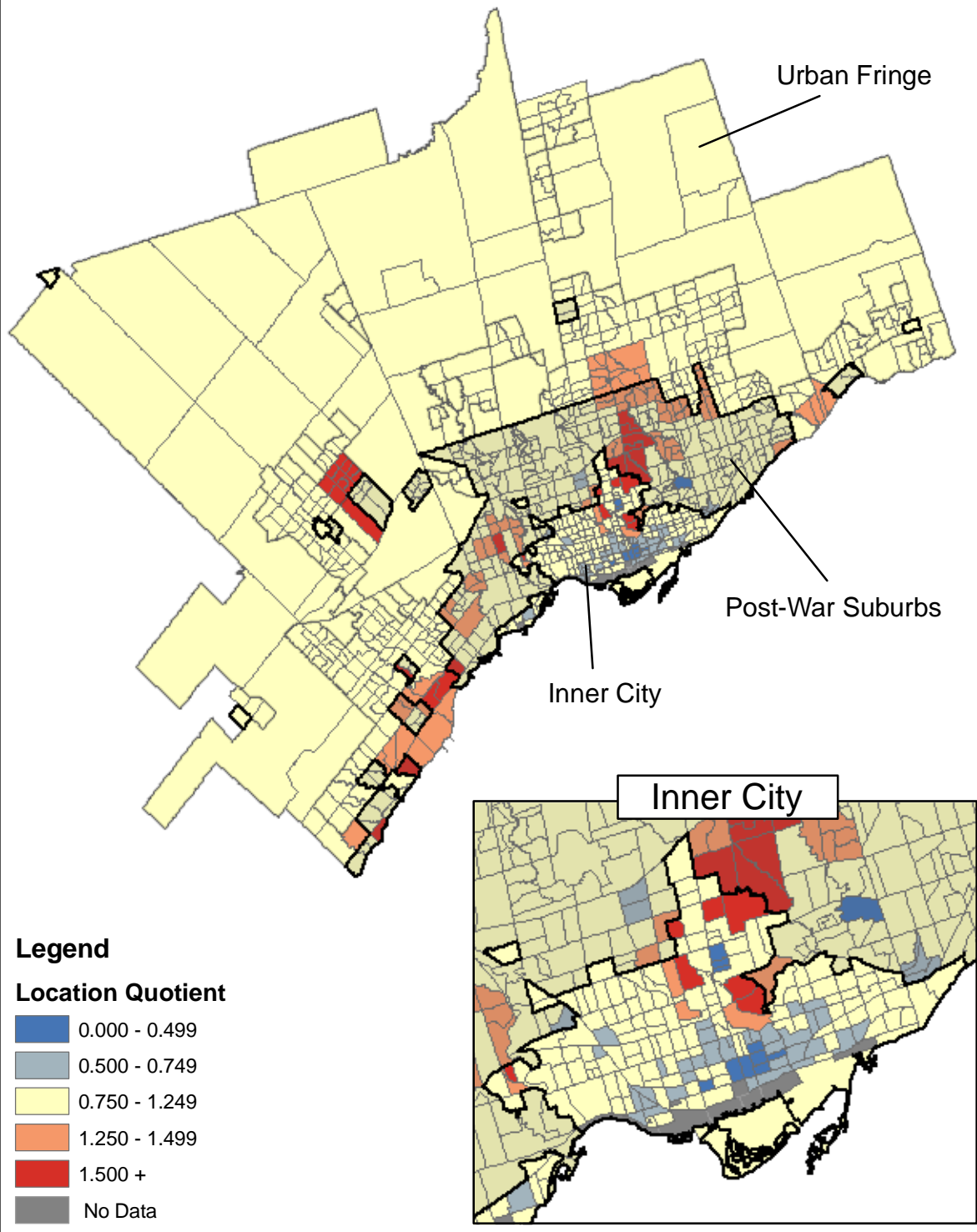
Source: Statistics Canada (2008B, 2007)

Figure 4.11 - 2006 Census  
Per Capita Income:  
Local Moran's I of Location Quotient



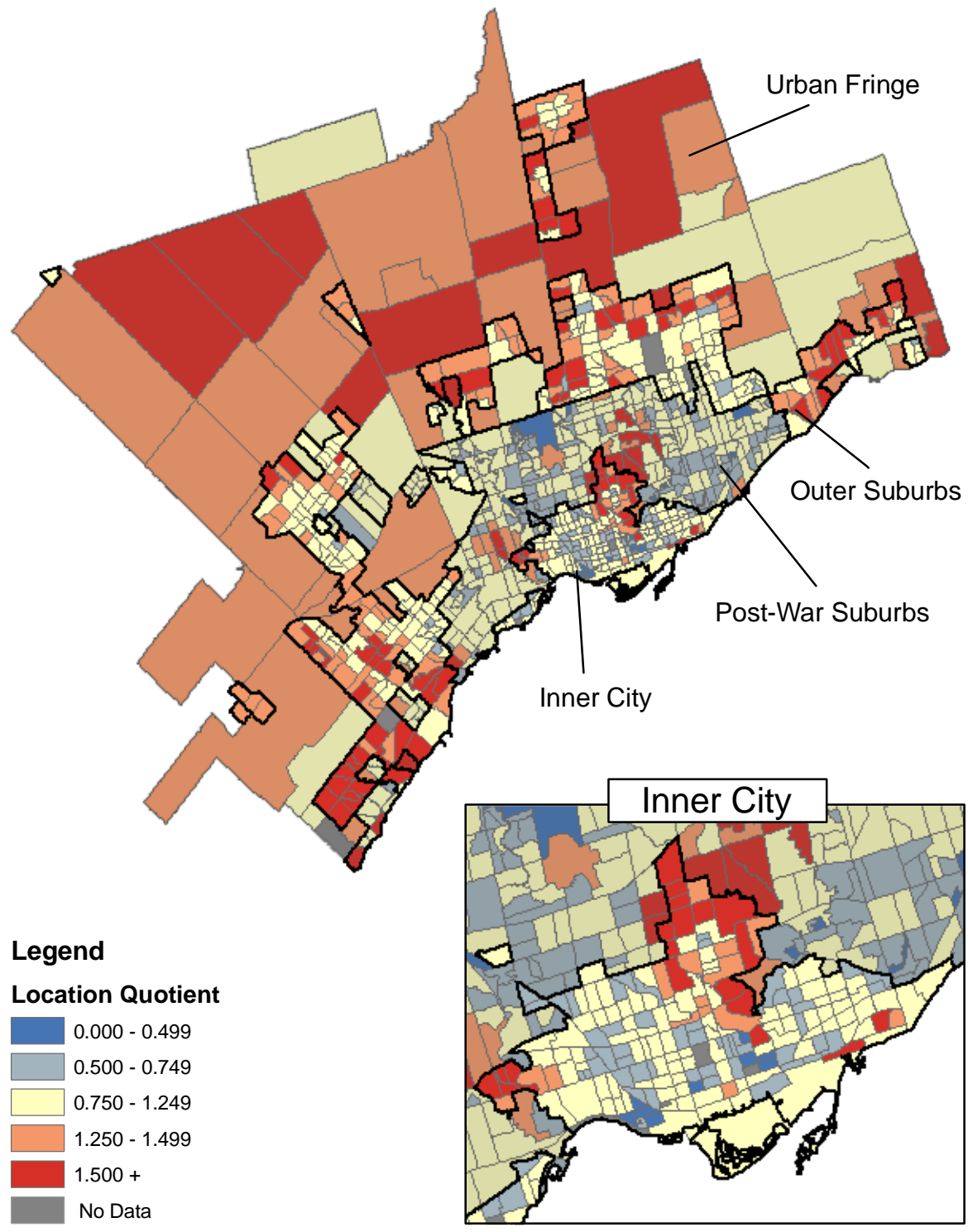
Source: Statistics Canada (2007, 1971B)

Figure 4.12 - 1971 Census  
Median Household Income:  
Location Quotient



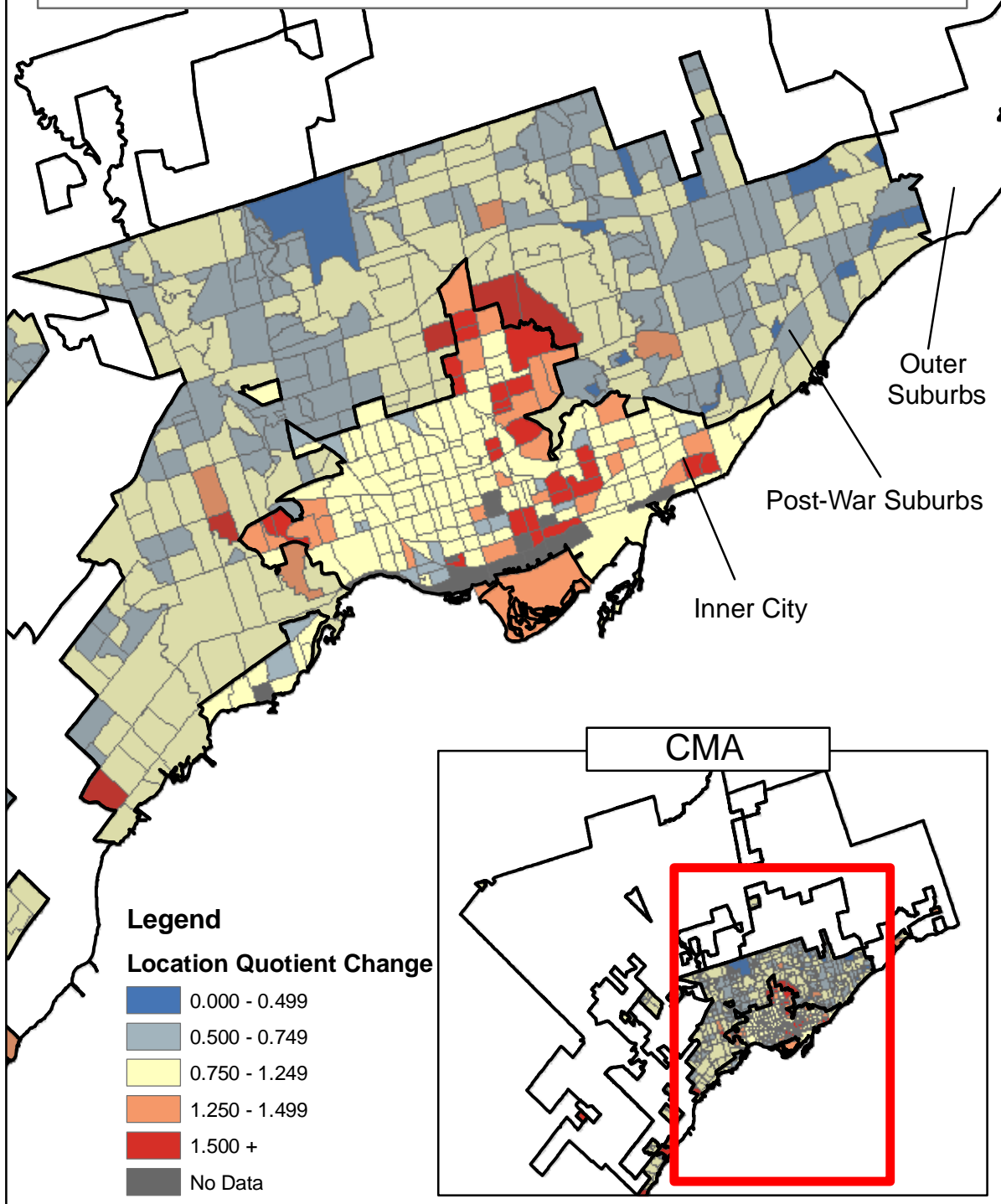
Source: Statistics Canada (2008B, 2007)

Figure 4.13 - 2006 Census  
Median Household Income:  
Location Quotient



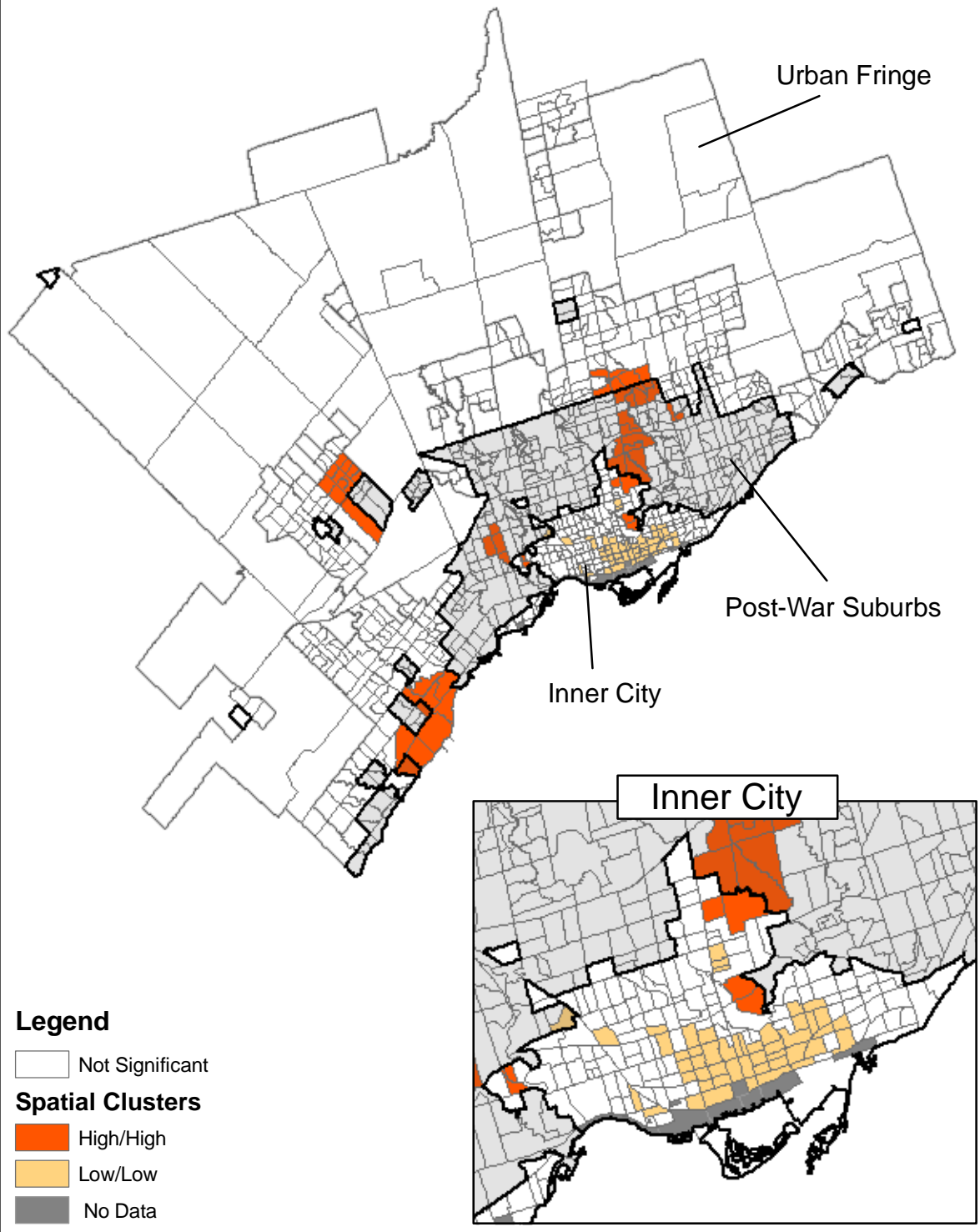
Source: Statistics Canada (2008B, 2007, 1971B)

Figure 4.14 - Census  
Median Household Income:  
Change in Location Quotient



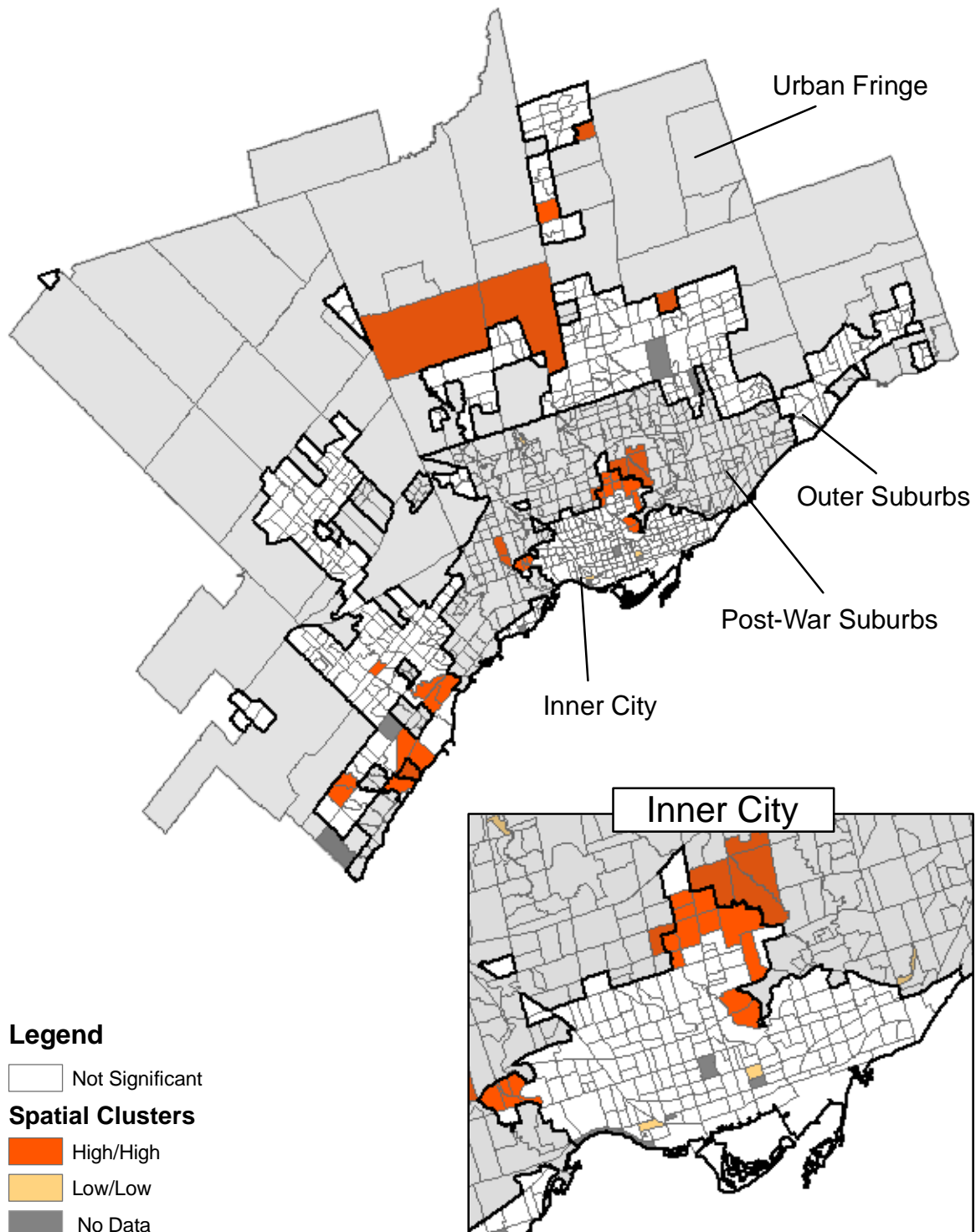
Source: Statistics Canada (2007, 1971B)

Figure 4.15 - 1971 Census  
Median Household Income:  
Local Moran's I of Location Quotient



Source: Statistics Canada (2008B, 2007)

Figure 4.16 - 2006 Census  
Median Household Income:  
Local Moran's I of Location Quotient





### 4.3 Maps of Social Status Variables

#### *Socioeconomic Status*

As would be expected occupational and educational variables show sectoral patterns. A central sector with relatively high socioeconomic status, and sectors in the east and west with relatively low socioeconomic status are visible in the maps. By 2006 these sectors run from the inner city to the urban fringe, although sectoral patterns in the outer suburbs and fringe appear to be more dispersed than in the inner city and the post-war suburbs. There has been a centralization of concentrations of managers, professionals and university educated residents both to the inner city and to the central sector. High concentrations of managers are also located across the outer suburbs and the urban fringe in 2006, where they contribute to high socioeconomic status in these zones. At the same time, there has been a decentralization of concentrations of manufacturing workers, service and sales workers, and less educated residents, whether to the outer suburbs as with high school graduates and holders of post-secondary certificates and diplomas, or to the relatively low-income eastern and western sectors for those with low levels of education, and who are employed in manufacturing and lower-status service sector occupations. Although spatial differentiation in relative unemployment rates does not reveal clear sectoral patterns, there has been a decentralisation of disadvantage, as most tracts that have relatively high unemployment rates have shifted from the inner city to the post-war suburbs. The simultaneous centralization and decentralization of socioeconomic advantage, and the decentralization of socioeconomic disadvantage has occurred along these sectors, and it is occurring in a manner that contributes to the divergence between the urban zones.

The eastern and western sectors of moderate to low per capita and household income, among other indicators of low socioeconomic status, that are apparent in choropleth maps are in part shaped by the location of public housing. The location of public housing in the City of Toronto follows this same 'U' shaped pattern, and public housing developments are often located close to private rental housing, contributing to the concentration of poverty in these locations (United Way of Greater Toronto and The Canadian Council on Social Development, 2004, Murdie, 1998). These developments were built in the 1960s and 1970s when the post-

war suburbs were growing rapidly, government funding was allocated towards public housing, and the investment climate supported the construction of private rental housing. As the private rental housing of this period has aged, many of the units have become home to lower-income households. In particular, public housing in City of Toronto is reserved exclusively for low income groups, and by the late 1980s had high rates of single parenthood, male unemployment, visible minorities, and households that are dependent on social assistance (Murdie, 1998). The location of these sites in relatively less accessible areas of the city, and in the auto-oriented urban form of the post-war suburbs, contributes to the social exclusion experienced by residents. However, given the localized nature of the public housing developments, the broad extent of the sectors of low socioeconomic status perhaps indicates that the location of public housing is one of a number of factors that shape social spatial disparities. The location of the public housing communities may also contribute to the dispersion of low income tracts. There are fewer clusters of tracts with low per capita and median household incomes in 2006 than there are in 1971. Most of the low income clusters that disappeared over the study period were located in the south of the inner city in 1971, where with gentrification many private rooming and boarding houses have since been deconverted back to rental tenure. The location of statistically significant clusters of tracts with high levels of unemployment, and of residents with no certification, degree or diploma in the east and west of the post-war suburbs may be related to the location of public housing communities. Nonetheless, it appears that public and low rent housing may fix the location of persistent concentrations of poverty, but these developments have not contributed to the clustering of low-income tracts.

### *Occupational Concentrations*

As with income, change is occurring between zones among occupational variables, but it is occurring in a manner that increases the spatial extent of the areal sectors that are apparent in Fordist city. The spatial concentration of workers in management, the professions, and manufacturing form clear sectors in 1971. The most prominent is the central axis with high concentrations of managers and professionals and low concentrations of manufacturing workers, which is present in both choropleth maps and maps of statistically significant clusters and outliers. This sector begins in the downtown and runs north in the inner city and across the



post-war suburbs to the urban fringe in 1971. A similar, although less pronounced, sector runs parallel to Lake Ontario in the southwest of the CMA, beginning in Etobicoke and including parts of Mississauga and Oakville. Two sectors with low concentrations of managers and professionals and high concentrations of manufacturing workers run adjacent to this central axis from the waterfront, through the inner city and across the post-war suburbs. Of the two, the eastern sector is less prominent than the western sector, which is evident in choropleth maps and encompasses numerous significant clusters. In 1971, the concentrations of different types of workers along these sectors are relatively even across the inner city and post-war suburbs. Though, tracts with high concentrations of managers are more pronounced in the suburbs than in the inner city.

In 2006 the sectors are still present. Spatial variation in the occupational structure of the outer suburbs in 2006 also follows sectoral patterns, although in a much more dispersed manner than in the inner city and the post-war suburbs. However, the distribution of census tract concentrations between the urban zones has become more uneven. In 2006, new concentrations of managers have appeared throughout the outer suburbs and the urban fringe, and along the waterfront in the inner city. Professionals have become highly concentrated in tracts across the inner city. Manufacturing workers are highly concentrated to the east and west of the post-war suburbs, and in the outer suburbs of Peel, York and Halton Regions. Keeping in mind that the change in census coding systems for occupations limits direct comparisons, it appears that each occupational variable shows a different spatial trend: concentrations of managers have simultaneously centralized and decentralized, concentrations of professionals have become highly centralized, and concentrations of manufacturing workers have decentralized. The residential locations of service and sales workers are much more diffuse than the other occupational categories, although by 2006, tracts with high concentrations are located in the eastern and western sectors.

Inconsistent occupational coding schemes limit the reliability of these findings. Nonetheless, the patterns identified here are similar to those found by Walks (2001), who also compared the location quotients for occupational groups among census tracts in the Toronto CMA, but for the census years of 1971 and 1991 and with a consistent coding system. Both analyses show rising concentrations of managers and professionals in the inner city, rising suburban concentrations of manufacturing workers, and rising concentrations of service and

sales workers in the eastern and western sectors. Thus, findings in this study reliably show that spatial shifts in the Toronto occupational structure, which began in 1971, have continued in the nineties and the early twenty-first century. The next paragraphs detail the spatial patterns found in maps of occupational concentrations.

#### *Tract Concentrations of Managers - Figures 4.17 to 4.21*

Figure 4.17 and 4.18 each show that for managers, the high concentration central sector persisted over the study period, but there have also been a number of changes. In 2006 there are numerous tracts with high concentrations of managers throughout the outer suburbs and the urban fringe, particularly in the Regions of York, and Halton, and in the City of Pickering at the far east of the CMA (Figure 4.18). At the same time, in the inner city there are much more tracts with high concentrations of managers and much fewer tracts with low concentrations than there were in 1971. Figure 4.19 shows that there were increases in the concentration of managers of over 50% in virtually all of the inner city census tracts that had low concentrations of managers in 1971. At the same time, concentrations decreased in many of the tracts in the post-war suburbs. Significant low concentration clusters of managers disappeared from the inner city and appeared in the post-war suburbs, while the number of high concentration clusters increased in the inner city (Figure 4.20 and Figure 4.21). Extensive high concentration clusters correspond with the wealthy areas that have persisted to the north of the inner city and the far west, overlapping with the post-war suburbs. A number of high concentration clusters can also be found throughout the outer suburbs and fringe in 2006.

#### *Tract Concentrations of Professionals - Figures 4.22 to 4.26*

In 1971 census tracts with high concentrations of professionals follow similar patterns to that of managers, with sectors running along a central axis and along the western waterfront, although these sectors reach further into the inner city (Figure 4.22). There are also a number of agglomerations of high concentration tracts across the urban fringe. In 2006, tracts with high concentrations of professionals have consolidated into a wide central sector that stretches from the downtown to the urban fringe (Figure 4.23). High concentrations of professionals are also

located and across the east and west of the inner city and the inner city waterfront. Figure 4.24 confirms that as with managers, concentrations of professionals increased greatly across in the inner city. There are also a number of tracts across the post-war suburbs where the concentration of professionals increased, but many of these tracts in the east and west still had low to moderate concentrations in 2006. Figure 4.25 and 4.26 support the finding that professionals have become highly centralized, as there has been a marked increase in the extent of high concentration clusters in the inner city along with a decrease in the number of high concentration clusters in the post-war suburbs, and the appearance of low concentration clusters in the post-war suburbs, outer suburbs and urban fringe.

#### *Tract Concentrations of Manufacturing Workers - Figures 4.27 to 4.31*

Figures 4.27 and 4.28 show that while there are moderate to high concentrations of in census tracts are manufacturing workers throughout the inner city in 1971, most of the tracts in this zone have very low concentrations of manufacturing workers by the end of the study period. In 2006, concentrations are high in the east and west of the post-war suburbs, and in the outer suburbs of Markham, Vaughan and Peel Region. Figure 4.29 shows that indeed most census tracts in the inner city have experienced a decline in the concentration of manufacturing workers over the study period. There were also declines in the post-war suburbs, although concentrations increased in the area of the eastern and western sectors. Maps of statistically significant clusters show that high concentration clusters of manufacturing workers have disappeared from the inner city over the study period (Figures 4.30 and 4.31). Clusters with high concentrations of manufacturing workers are located exclusively in the suburbs and the urban fringe in 2006.

#### *Tract Concentrations of Service and Sales Workers - Figures 4.32 to 4.36*

In 1971, workers in service and sales occupations are concentrated in the south of the inner city where per capita incomes are low, as well as in middle income tracts in the post-war suburbs (Figure 4.32). In 2006, concentrations of service and sales are scattered across the inner city, the post-war suburbs and the outer suburbs (Figure 4.33), although there are no high

concentration tracts in the urban fringe in either year. Figure 4.34 shows that concentrations increased in many of the census tracts in the east and west of the post-war suburbs, and the inner city. These findings are supported by maps of statistically significant clusters and outliers, which show that many of the high concentration clusters that had been located in the south of the inner city are no longer there in 2006 (Figure 4.35 and Figure 4.36). High concentration clusters appear in the northwest of the inner city and in the east and west of the post-war suburbs in 2006. A narrow sector of tracts with low concentrations of service and sales workers has appeared along the central axis of the inner city by 2006 in both the choropleth map (Figure 4.33) and the map of  $I_i$  (Figure 4.36).

### *Educational Concentrations*

Concentrations of residents with all levels of educational attainment display very similar sectoral patterns to those of occupational concentrations in 1971 and 2006. Again, the most prominent sector is one of high socioeconomic status that runs from the fringe to the downtown in both census years. The nature of this sector has changed, however. In 1971 the central sector included a number of clusters where residents who had attained a high school or post-secondary certificate or diploma were concentrated, as well as high concentrations of university graduates. In 2006, this sector still contains tracts with high concentrations of residents with university degrees, but it now overlaps with low concentration clusters of residents with high school or post-secondary certificates or diplomas. Those residents who have attained a high school or post-secondary certificate or diploma have become dispersed to the outer suburbs and fringe in 2006 to a degree that largely diminishes the high concentration sectors that were present in 1971 for these variables. By 2006, sectors for university educated residents and those with no certification, degree or diploma persist, even as concentrations of university residents have risen in the inner city and concentrations of residents without credentials have risen in the post-war suburbs. The western sector, which had been characterized by low education levels in 1971, has consolidated by 2006, and forms an extensive area from the inner city to the urban fringe, comprised of tracts with high concentrations of residents with no certification, degree or diploma. The change in the status of the central sector may be related to an increased difference between the earnings of high school

and college graduates versus those with a university degree (Boothby and Drewers, 2006). High income neighbourhoods that used to have a mix of education levels are now predominantly home to university graduates. The divergence in earnings between education levels may also explain diverging spatial trends, whereby concentrations of university educated residents have become more centralized, and concentrations of residents with high school or post-secondary certificates or diplomas have more suburbanized. The following paragraphs detail the spatial patterns found in maps of occupational concentrations.

*Tract Concentrations of University Educated Residents - Figures 4.37 to 4.41*

Figure 4.37 for 1971 shows that tracts with high concentrations of university educated residents form a prominent central sector and amass along the western boundary of the inner city. There are also high concentrations of university educated residents in the urban fringe in the municipalities of Brampton, Mississauga and Oakville. Figure 4.38 shows that by 2006, the central sector has become wider and reaches further into the urban fringe from the downtown up to York Region. There are also high concentrations along much of the inner city waterfront, and in the urban fringe in Peel and Halton Regions. Changes in tract concentrations of university educated residents are consistent with the rise in university educational attainment across the city over the study period. Figure 4.39 shows that concentrations of university educated residents increased in many of the tracts in the inner city and the post-war suburbs that had very low concentrations in 1971, and decreased in many of the tracts in the inner city and the post-war suburbs that had very high concentrations, relative to the CMA level. As shown in Figure 4.40 and 4.41, the prominent central sector is apparent in the location of statistically significant spatial clusters in both 1971 and 2006, and so is the cluster of tracts on the eastern border of the inner city. Maps of spatial clusters also provide further evidence that concentrations of university residents have become more centralized. There are more high concentration clusters in the inner city in 2006 than there were in 1971, and a number of low concentration clusters appear at the northwest border of the inner city and in the post-war suburbs.

*Tract Concentrations Residents with a Post-Secondary Certificate or Diploma - Figures 4.42 to 4.46*

Tract concentrations of residents with a post-secondary certificate or diploma have become increasingly decentralized over the study period. High concentration tracts were largely found throughout the post-war suburbs and in the north of the inner city in 1971, with some concentrations in the urban fringe, as can be seen in Figure 4.42. By 2006, most high concentration tracts are in the outer suburbs and fringe, as shown in Figure 4.43. Nonetheless, Figure 4.44 shows that changes in concentration occurred along the familiar sectors in the inner city and the post-war suburbs, but in a manner that reverses their relative status. Concentrations of post-secondary certificate and diploma holders increased to the east and west of the inner city and in some tracts in the post-war suburbs. There were also great declines in the tracts of the central sector in the inner city and the post-war suburbs that had high concentrations in 1971. The location of statistically significant clusters in Figures 4.45 and 4.46 also shows a marked decentralization of residents with post-secondary certificates and diplomas, towards the outer suburbs and fringe, with numerous high concentration clusters in these urban zones in 2006.

*Tract Concentrations Residents with a High School Diploma - Figures 4.47 to 4.51*

Figure 4.47 shows that in 1971 census tracts with high concentrations of residents with a high school diploma are located in the north of the inner city and across the post-war suburbs, as well as in the urban fringe in Oakville and Mississauga. By 2006, there are numerous low concentration tracts in the inner city, and few high concentration tracts in the post-war suburbs as shown in Figure 4.48, and high concentration tracts are located sporadically across the outer suburbs and urban fringe. Figure 4.49 shows that most tracts where there is an increase in the concentration of high school graduates are located along the eastern and western sectors. The 1971 map of  $I_i$  in Figure 4.50 shows that clusters of tracts with high concentrations of high school graduates were located in the north and west of the inner city and the south of the post-war suburbs. These clusters have disappeared by 2006, as shown in Figure 4.51, and high concentration clusters have appeared located in the outer suburbs and the

fringe around Brampton, Caledon, and Pickering. Conversely, low concentration clusters were located in the eastern and western sectors of the city in 1971, but by 2006 these clusters are now in the central sector and along the waterfront of the inner city.

*Tract Concentrations Residents with a No Certification, Degree or Diploma*

*- Figures 4.52 to 4.56*

High concentrations of residents who do not have any educational certification, degree or diploma are evident across the CMA in 1971, forming sectors in the east and west of the inner city and post-war suburbs, and a halo across the urban fringe (Figure 4.52). The 2006 map in Figure 4.53 shows that these sectors have grown, and they now stretch into the outer suburbs in the east, and into the fringe in the west. There are numerous high concentration tracts in the outer suburbs and fringe, with a number of such tracts in Peel and York Regions. Declines in the concentration of residents with low levels of education can be found in tracts across the inner city and down the central axis of the post-war suburbs and the inner city (Figure 4.54). Increases in tract concentrations occurred mainly in the post-war suburbs. The 1971 map of statistically significant spatial clusters shows a number of high concentration clusters in the inner city, near the waterfront and along the eastern and western rail lines (Figure 4.55). By 2006, the agglomeration of high concentration tracts is more conspicuous. Significant clusters with high concentrations of residents without educational credentials form a pronounced wedge along the western rail line in the inner city, and the in the post-war suburbs (Figure 4.56). This area of dense concentration runs from the inner city to the outer suburbs and urban fringe, and is one of the most visually striking clusters of tracts where residents with low socioeconomic status are concentrated that is found in this research.

*Unemployment Rates - Figures 4.57 to 4.61*

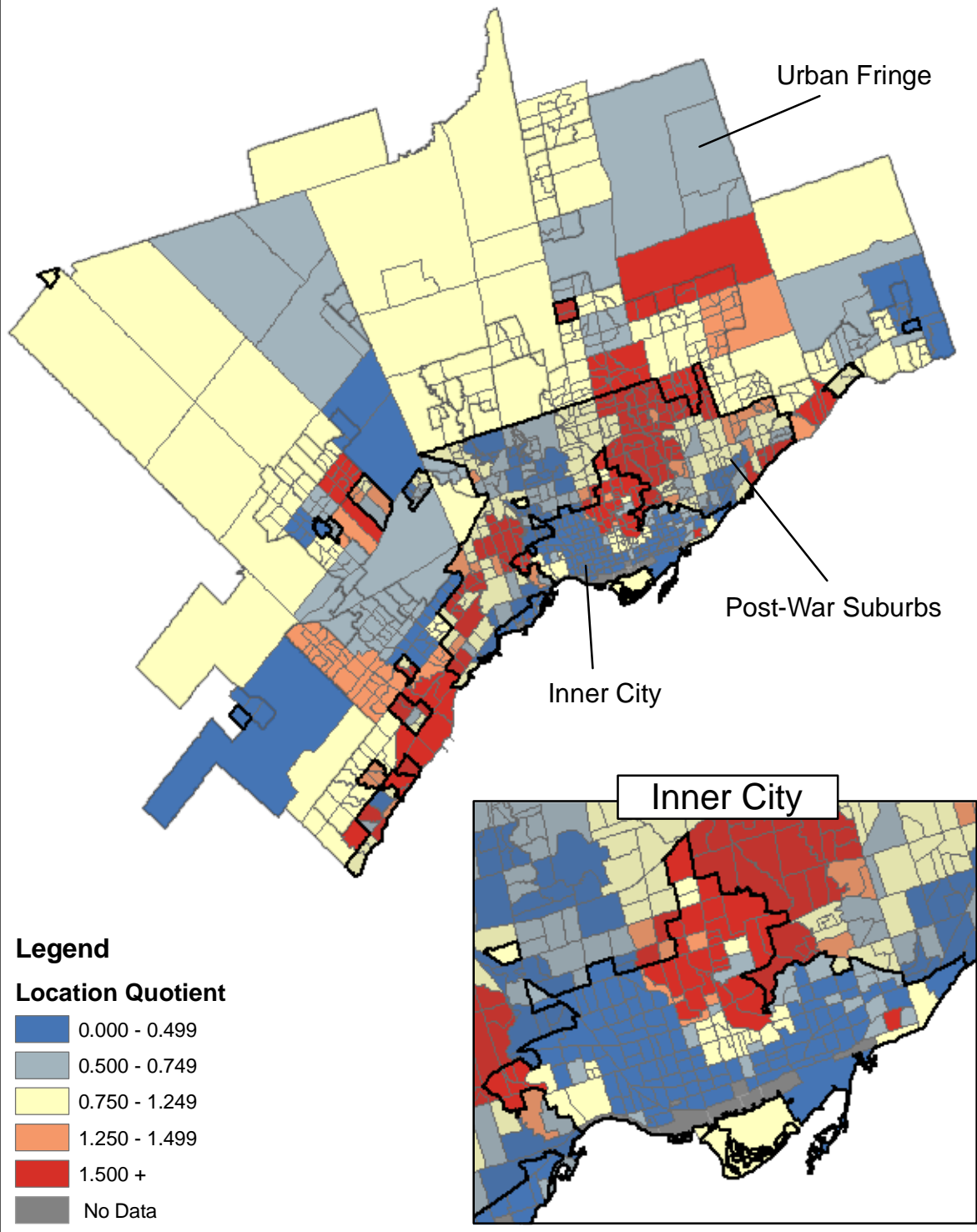
Mapping the census tract location quotients for the unemployment rate does not show distinct sectors as was apparent in the maps for occupational and educational variables. Instead, it appears that the spatial variation in unemployment rates diverges between each urban zone. In 1971, tracts with high unemployment rates, relative to the rate for the CMA,

are densely assembled in the south of the inner city (Figure 4.57). A few tracts appear in the post-war suburbs and the urban fringe, although these zones have many more tracts with relatively moderate to low unemployment rates. In 2006, the inner city and outer suburbs are peppered with tracts that have high, moderate and low unemployment rates, relative to the CMA rate (Figure 4.58). This is also true in the post-war suburbs. However, there are agglomerations of tracts with high relative unemployment rates in this zone that appear to be more or less in the areas of the eastern and western sectors, which are apparent in other maps of socioeconomic status. The fringe has a number of tracts with moderate to low relative unemployment rates in 2006. Although the different definitions of unemployment in the 1971 and 2006 censuses affect the reliability of year over year comparisons, Figure 4.59 suggests that much of the change in tract unemployment rates is occurring between urban zones. This comparison shows that relative unemployment rates have risen across the post-war suburbs and declined throughout much of the inner city over the study period. The location of statistically significant clusters in 1971 and 2006 provides further evidence that there has been a shift in the location of high unemployment rates from the inner city to the post-war suburbs. Whereas most clusters of tracts with high relative unemployment rates are densely amassed in the inner city in 1971 (Figure 4.60), by 2006 most clusters of tracts with high unemployment rates are located in the post-war suburbs (Figure 4.61).



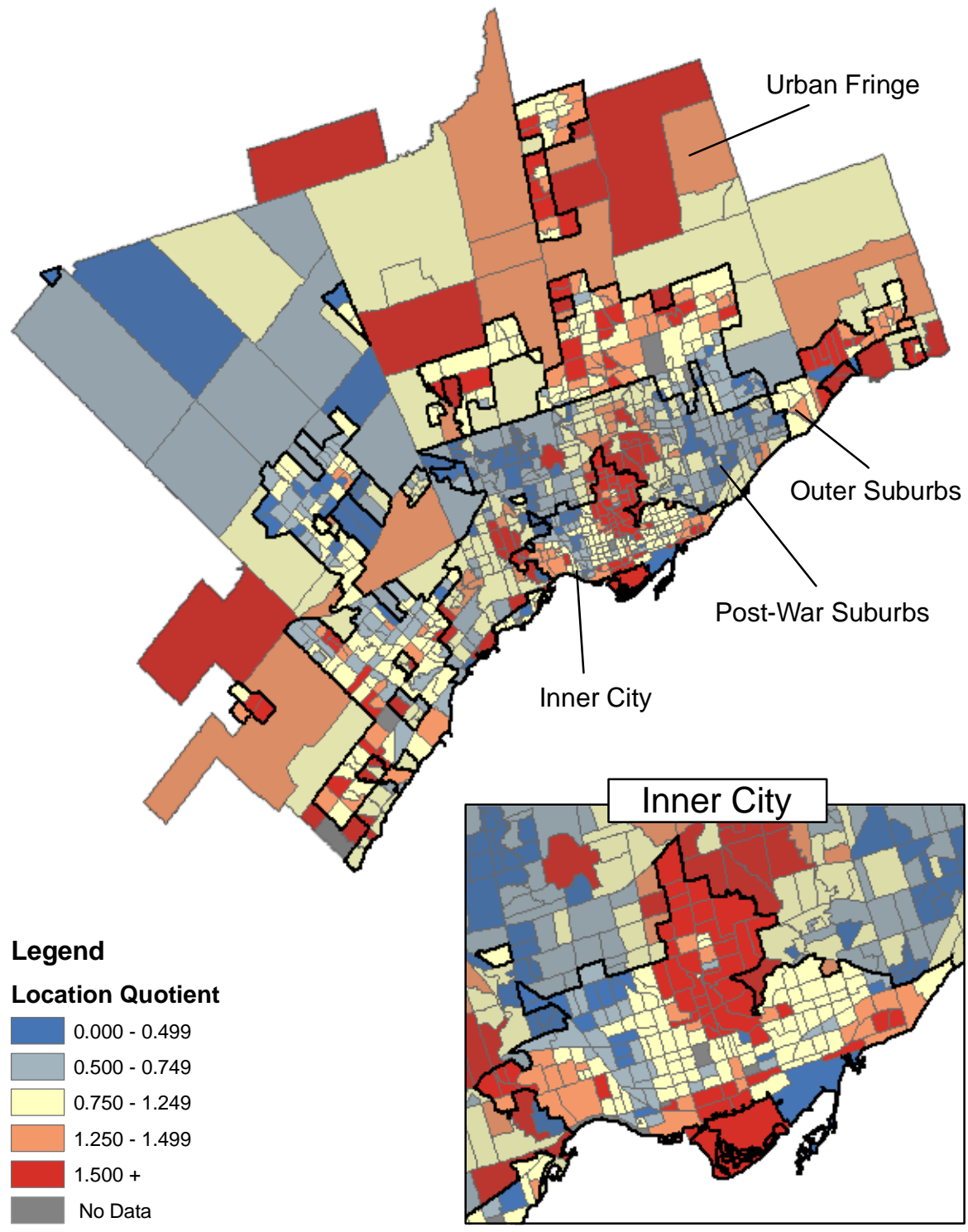
Source: Statistics Canada (2007, 1971B)

Figure 4.17 - 1971 Census  
Managers:  
Location Quotient



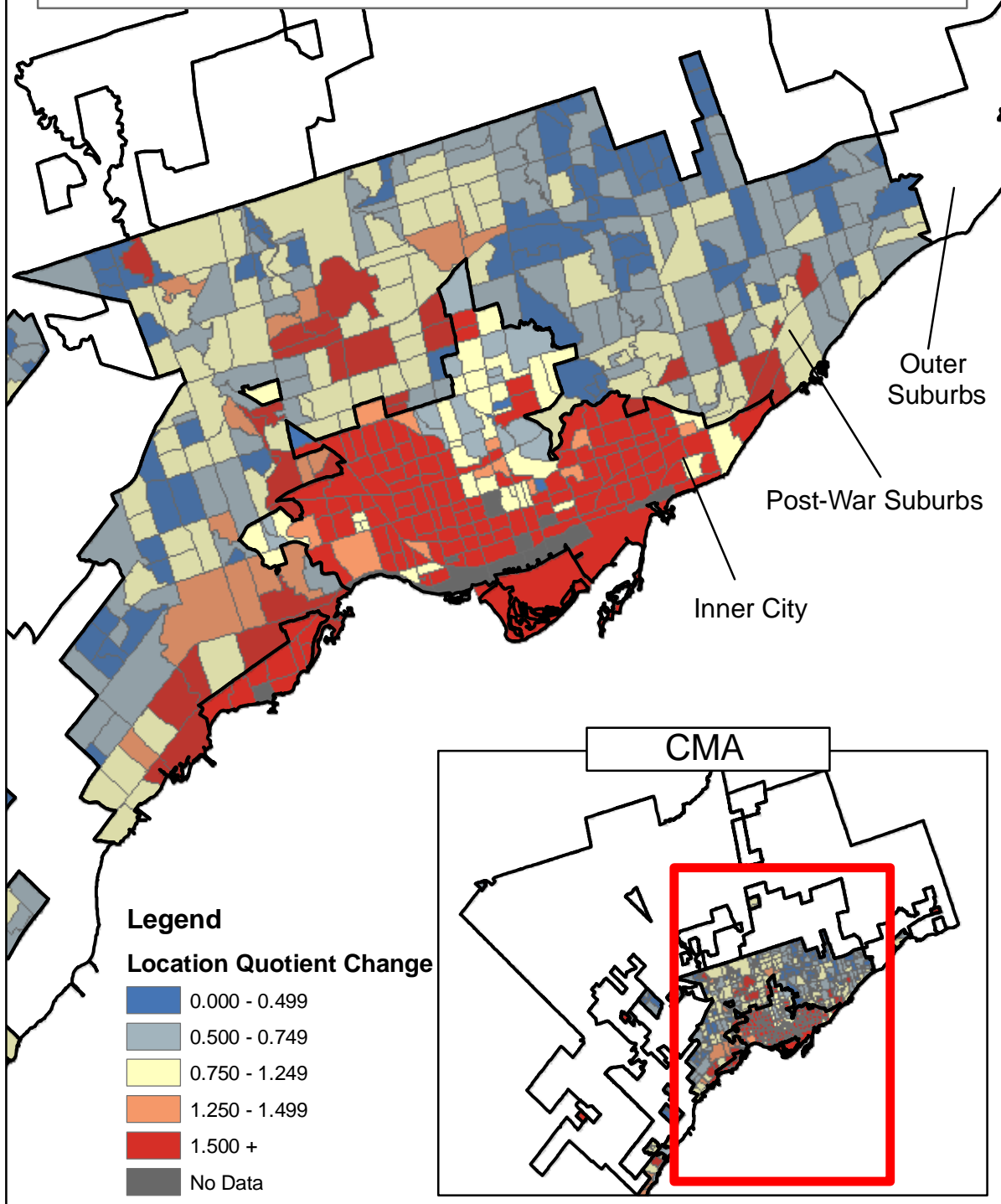
Source: Statistics Canada (2008B, 2007)

Figure 4.18 - 2006 Census  
Managers:  
Location Quotient



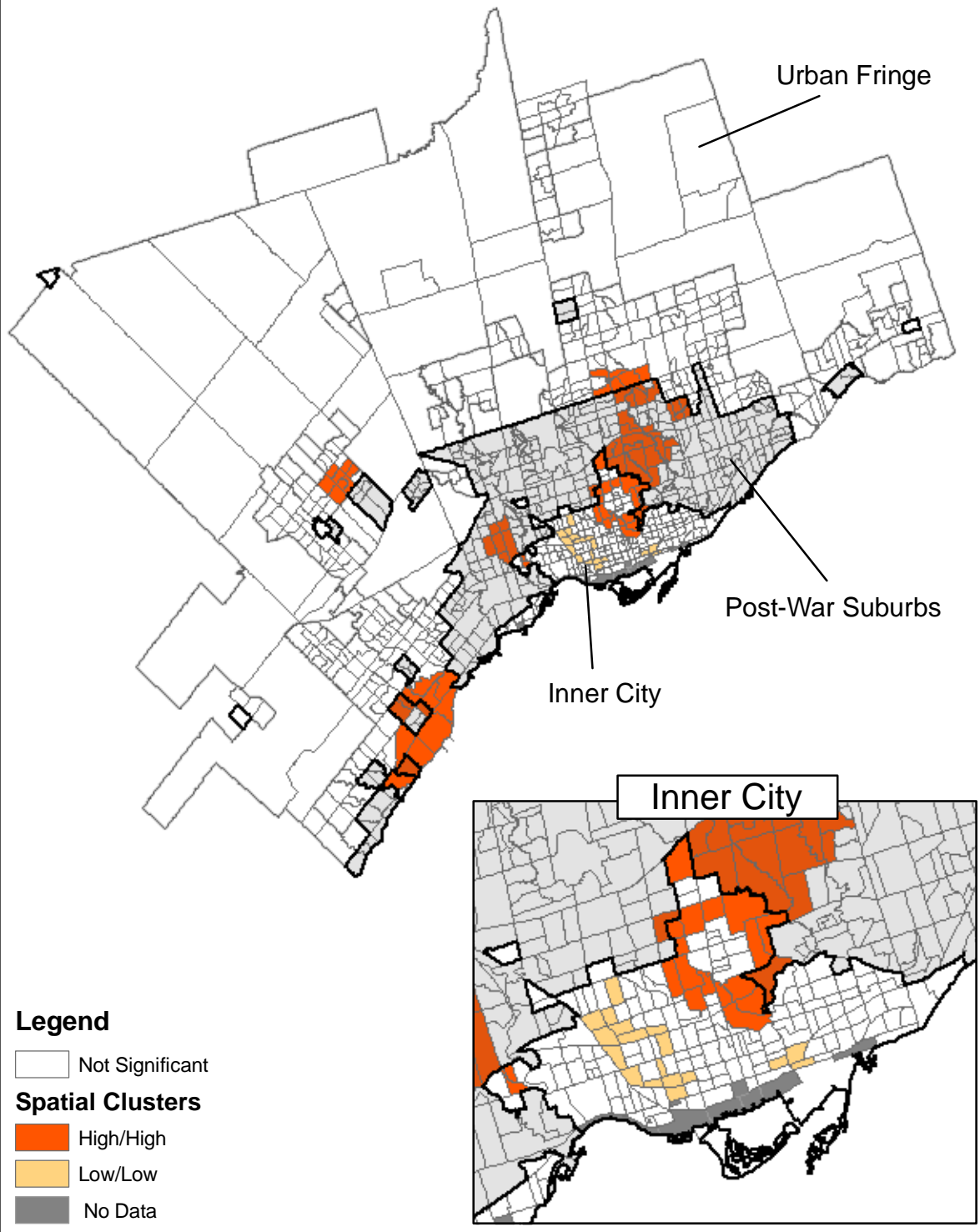
Source: Statistics Canada (2008B, 2007, 1971B)

## Figure 4.19 - 1971 to 2006 Censuses Managers: Change in Location Quotient



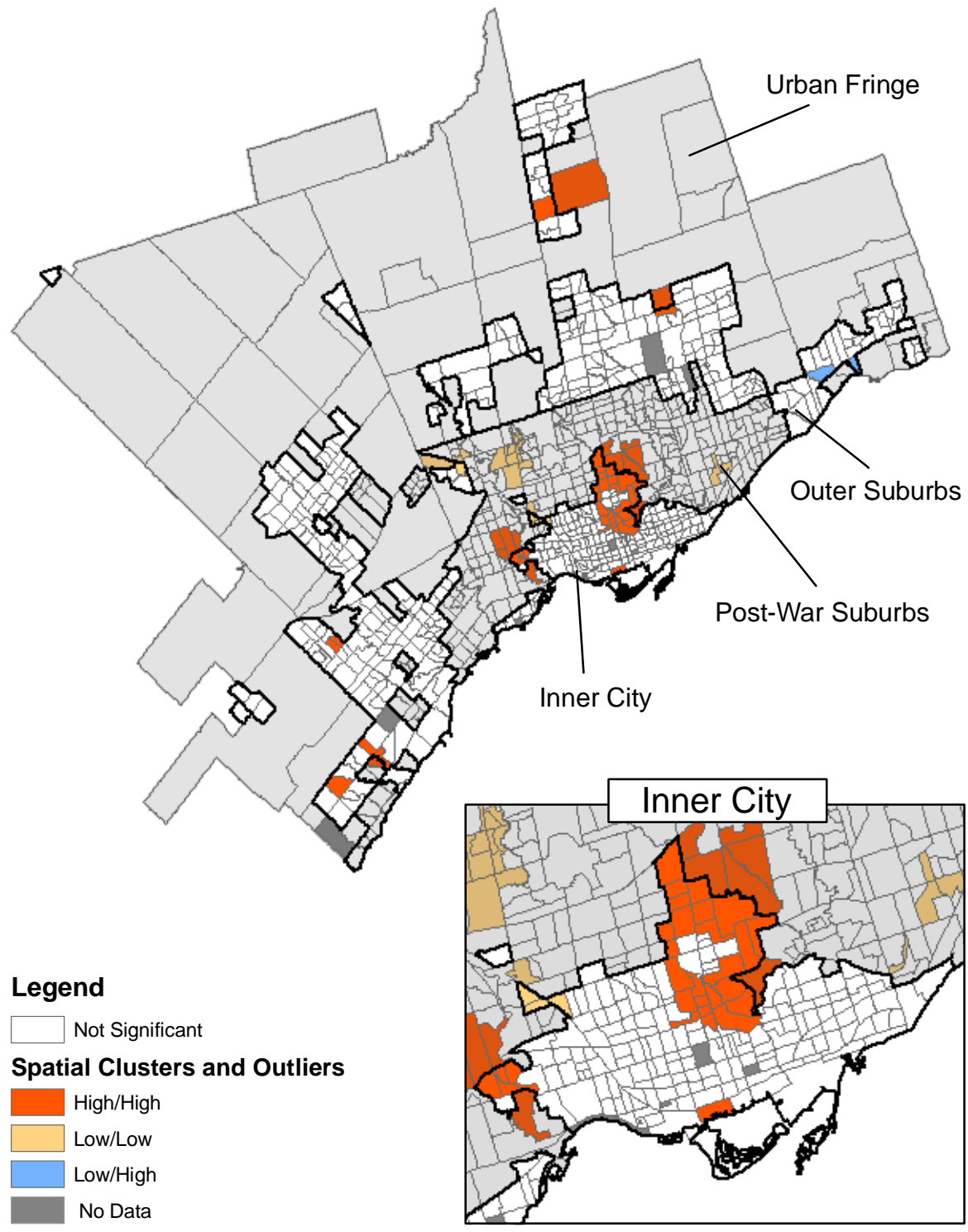
Source: Statistics Canada (2007, 1971B)

Figure 4.20 - 1971 Census  
Managers:  
Local Moran's I of Location Quotient



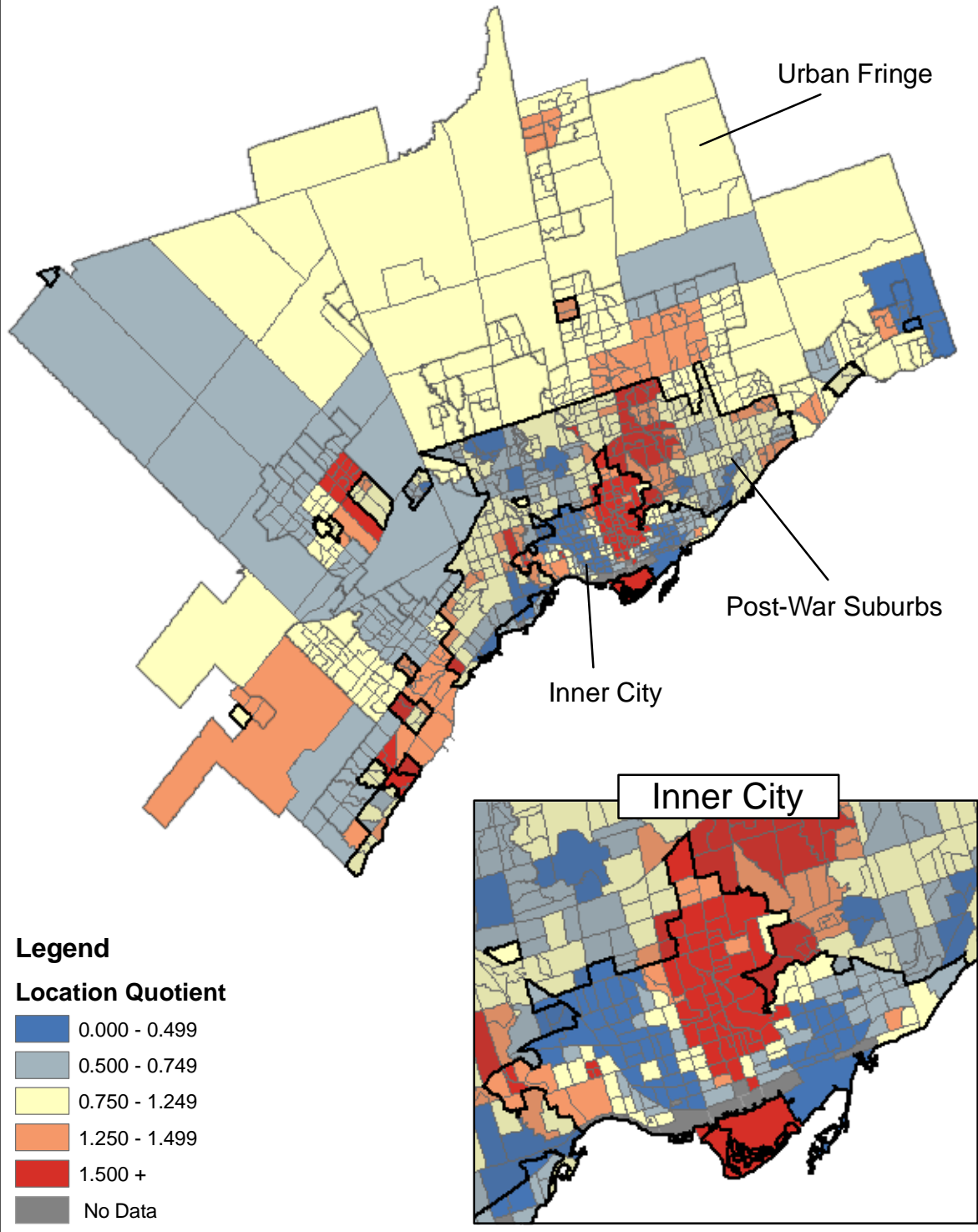
Source: Statistics Canada (2008B, 2007)

Figure 4.21 - 2006 Census  
Managers:  
Local Moran's I of Location Quotient



Source: Statistics Canada (2007, 1971B)

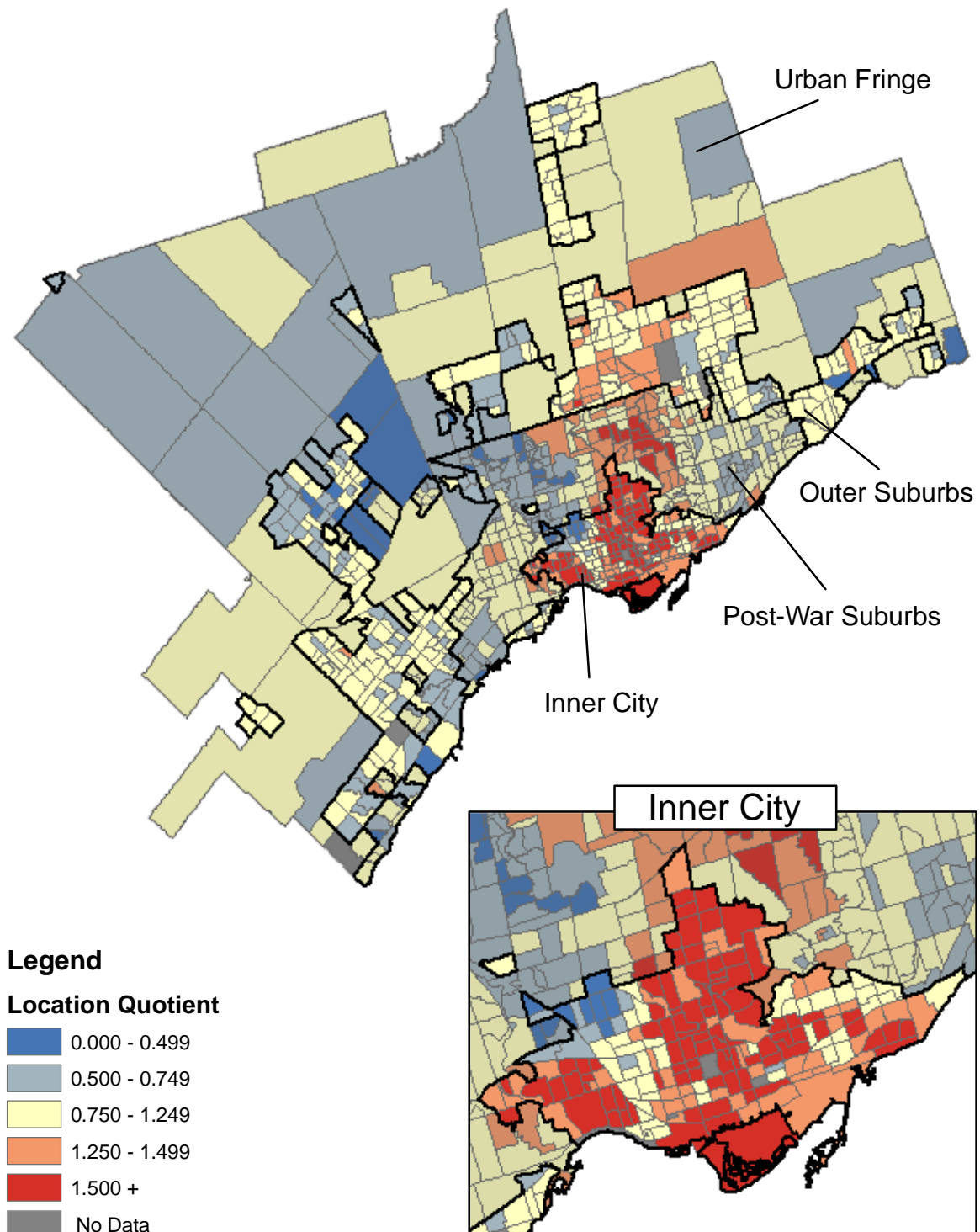
Figure 4.22 - 1971 Census  
Professionals:  
Location Quotient





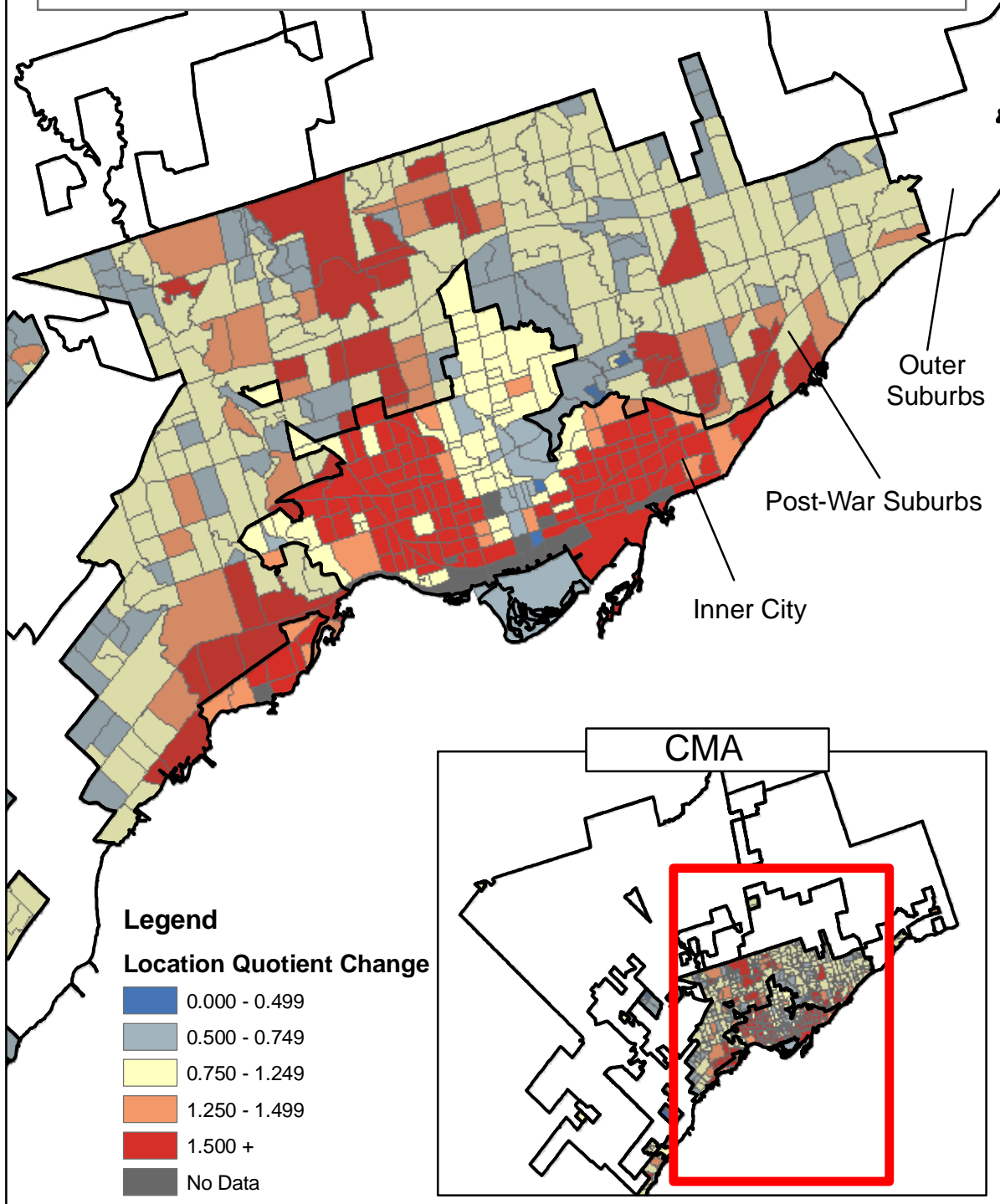
Source: Statistics Canada (2008B, 2007)

Figure 4.23 - 2006 Census  
Professionals:  
Location Quotient



Source: Statistics Canada (2008B, 2007, 1971B)

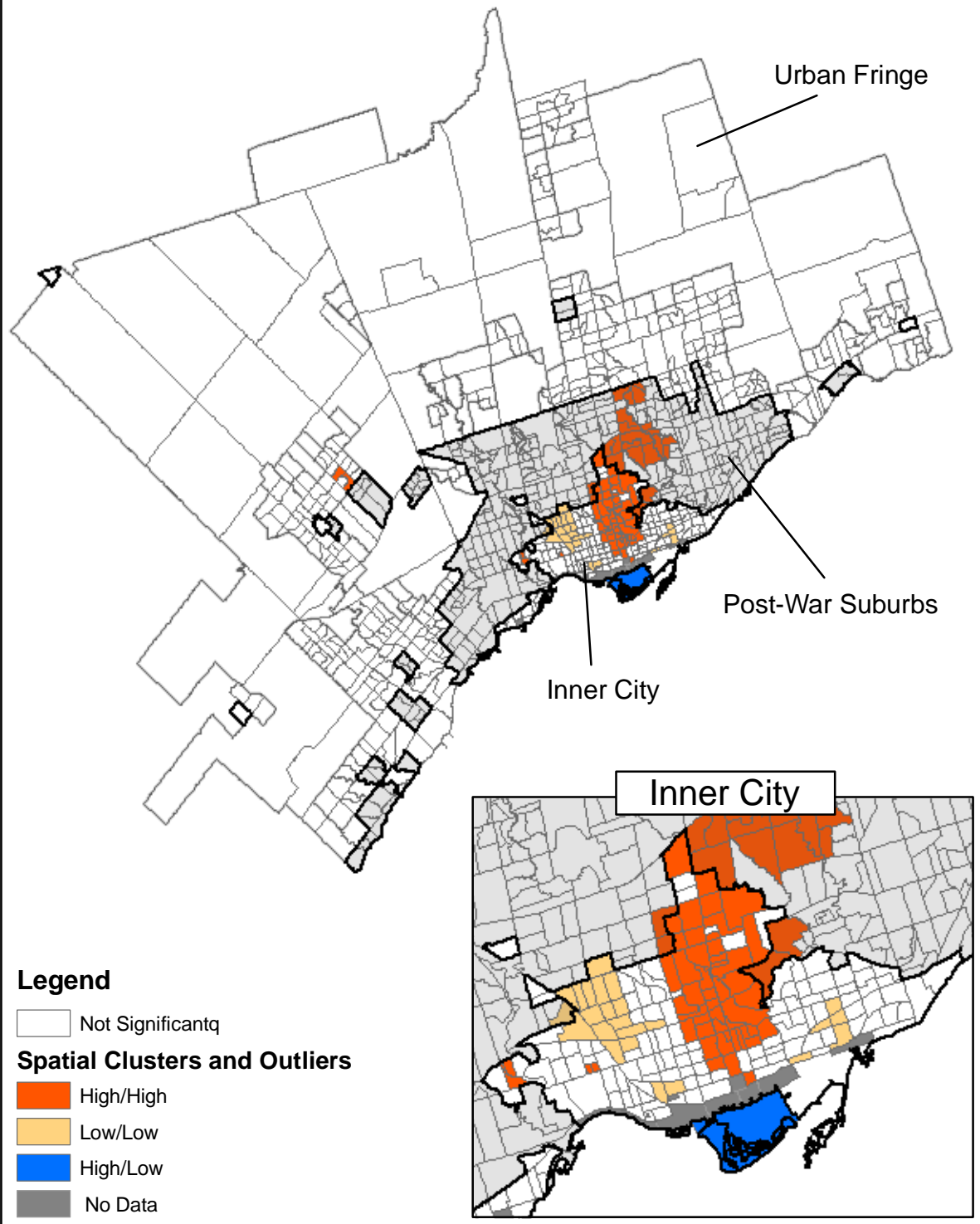
## Figure 4.24 - 1971 to 2006 Censuses Professionals: Change in Location Quotient





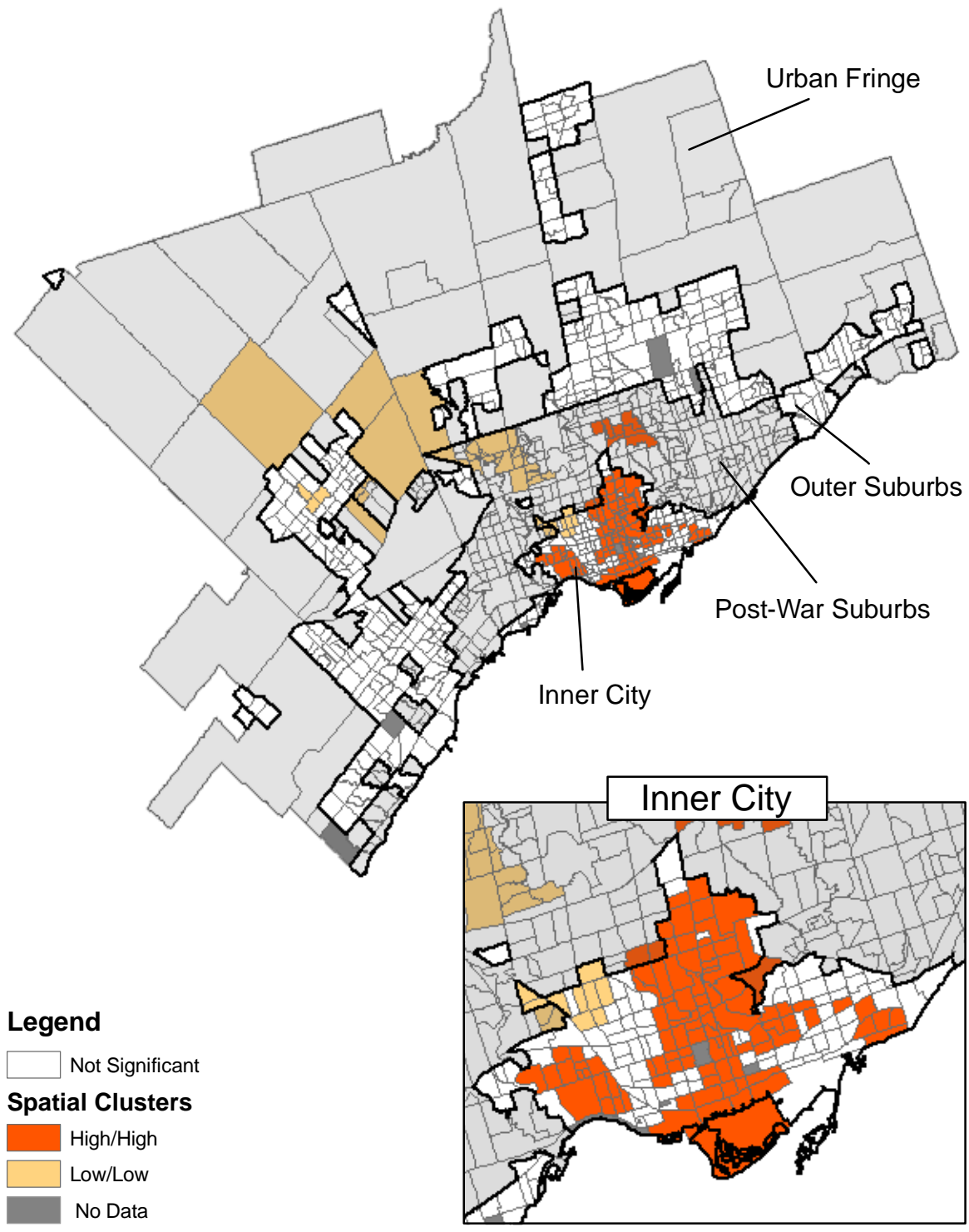
Source: Statistics Canada (2007, 1971B)

Figure 4.25 - 1971 Census  
Professionals:  
Local Moran's I of Location Quotient



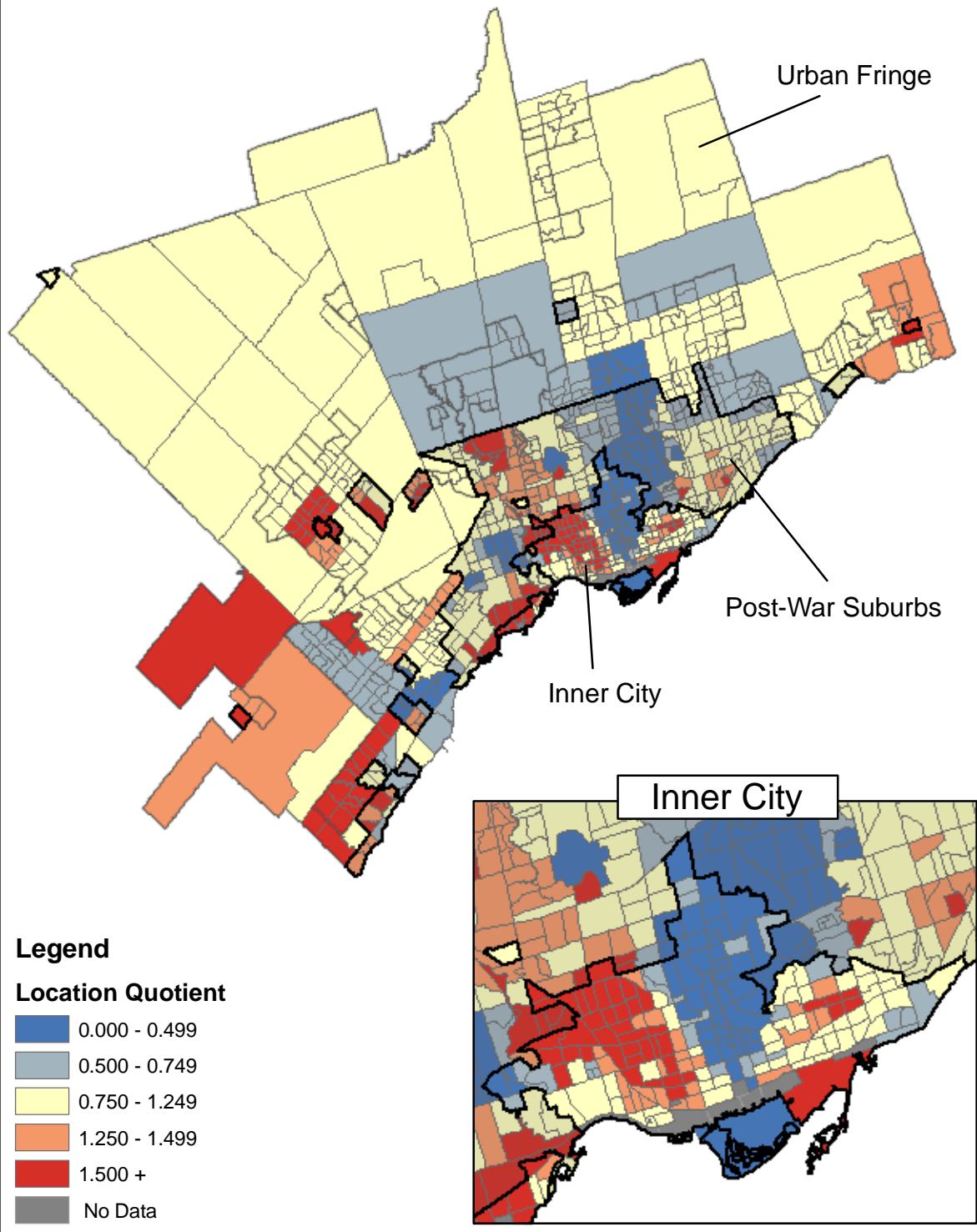
Source: Statistics Canada (2008B, 2007)

Figure 4.26 - 2006 Census  
Professionals:  
Local Moran's I of Location Quotient



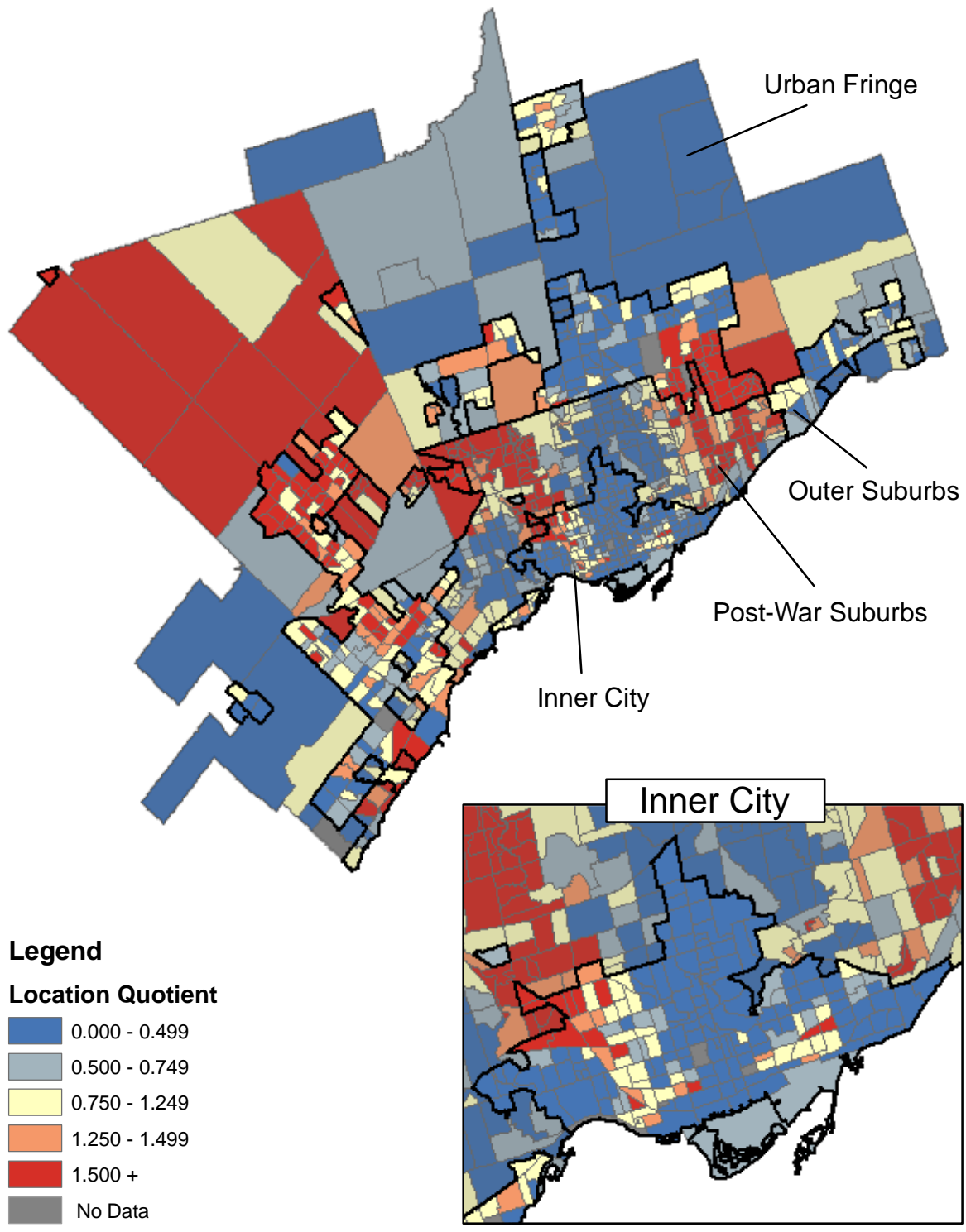
Source: Statistics Canada (2007, 1971B)

Figure 4.27 - 1971 Census  
Manufacturing Workers:  
Location Quotient



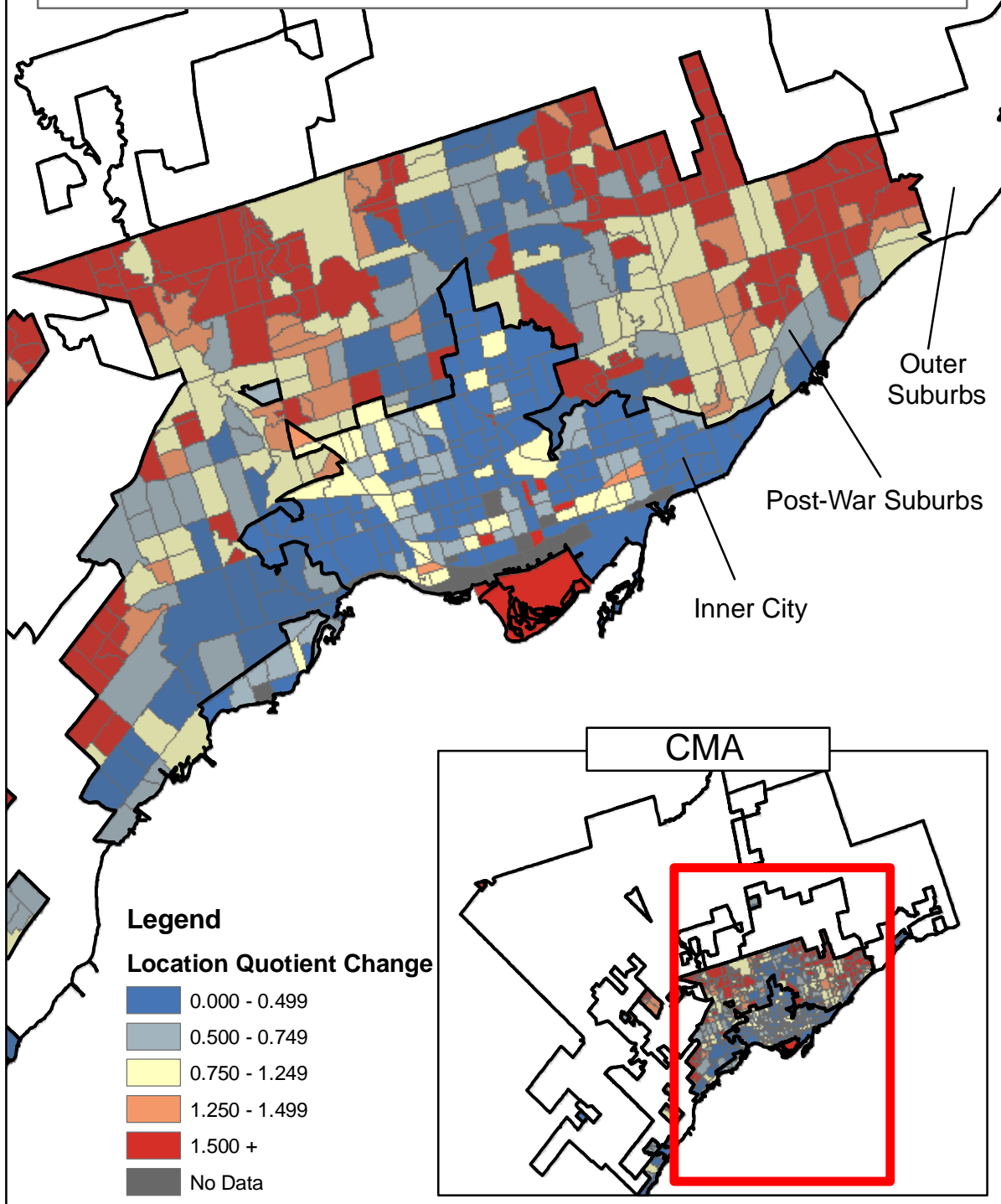
Source: Statistics Canada (2008B, 2007)

Figure 4.28 - 2006 Census  
Manufacturing Workers:  
Location Quotient



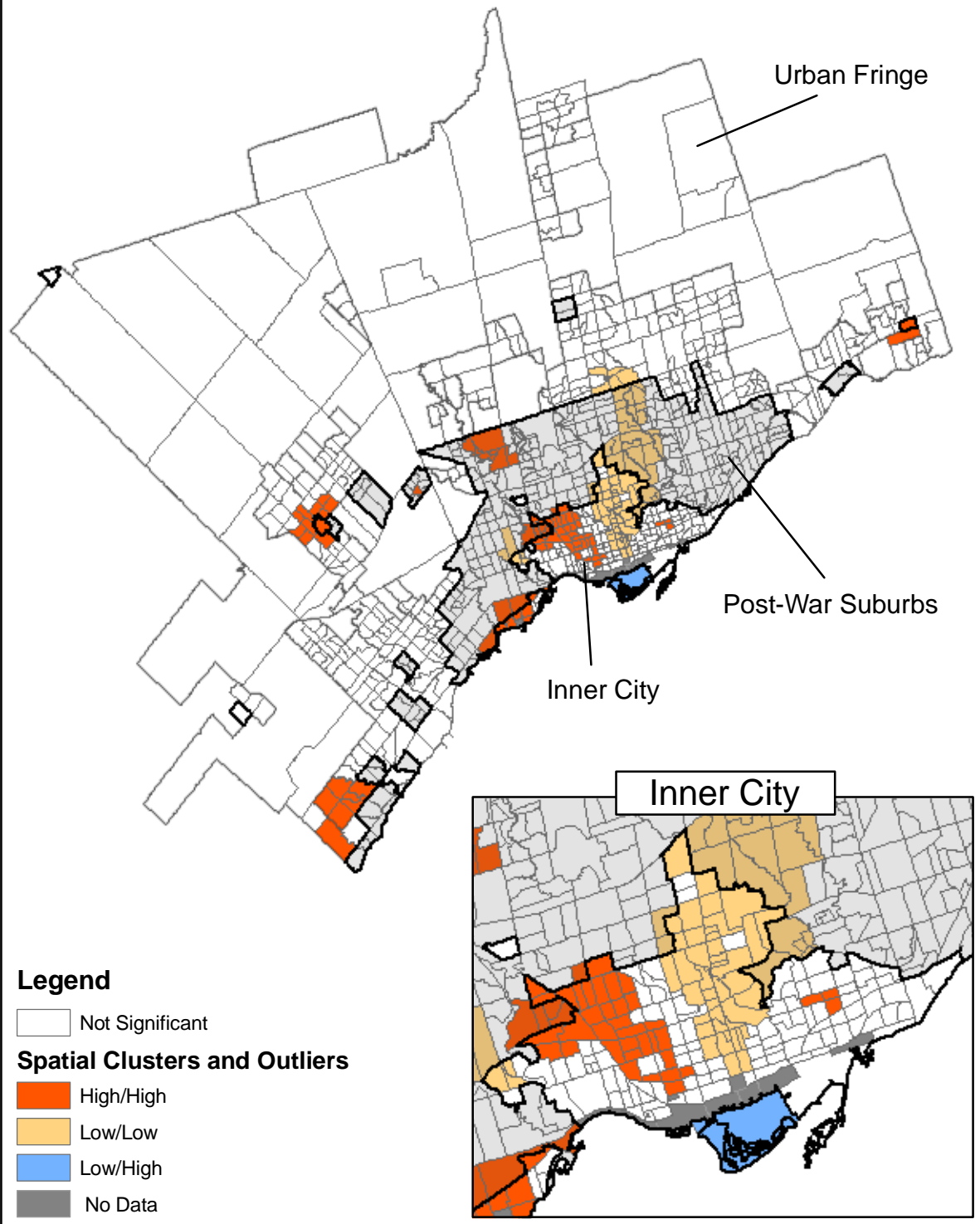
Source: Statistics Canada (2008B, 2007, 1971B)

## Figure 4.29 - 1971 to 2006 Censuses Manufacturing Workers: Change in Location Quotient



Source: Statistics Canada (2007, 1971B)

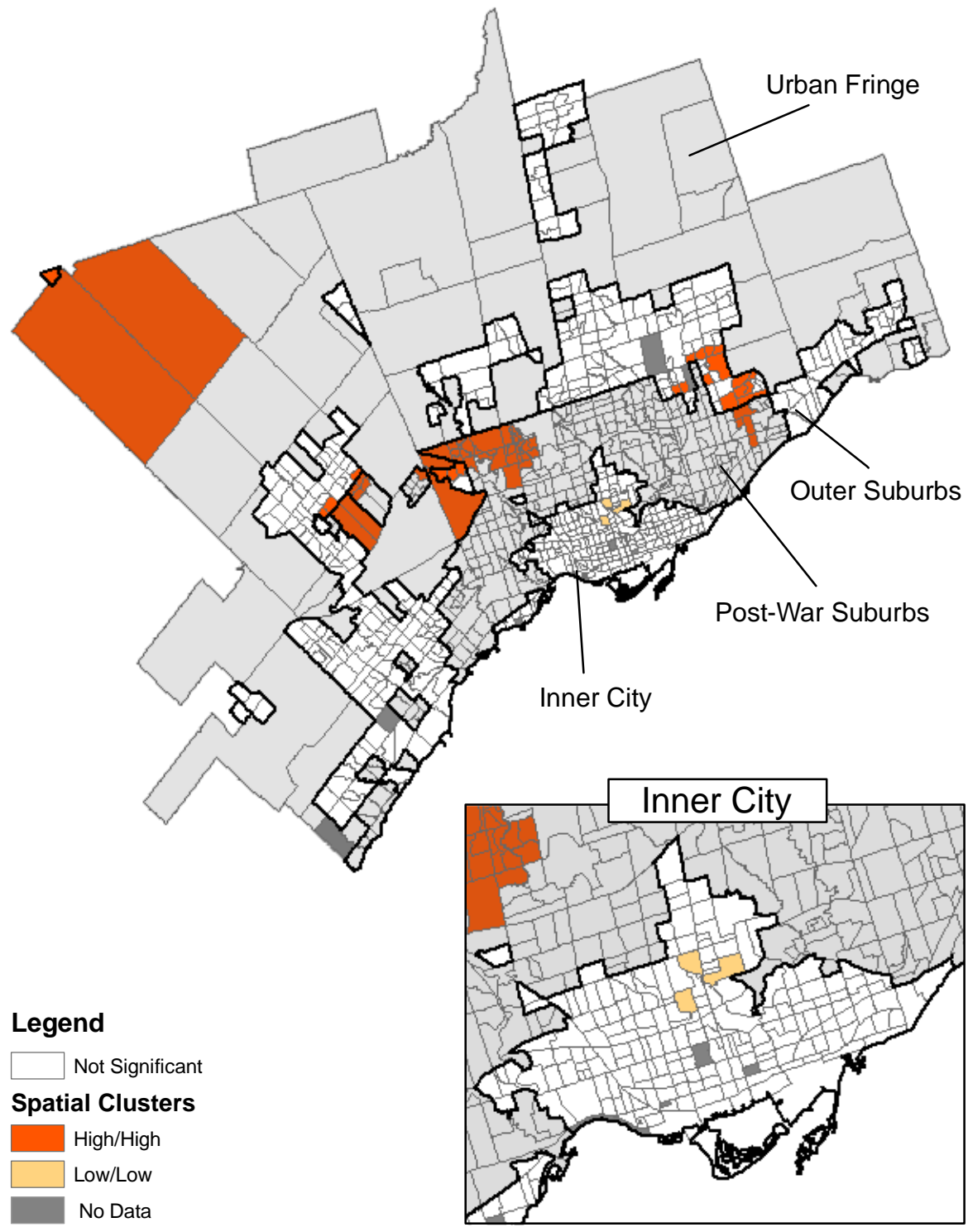
Figure 4.30 - 1971 Census  
Manufacturing Workers:  
Local Moran's I of Location Quotient





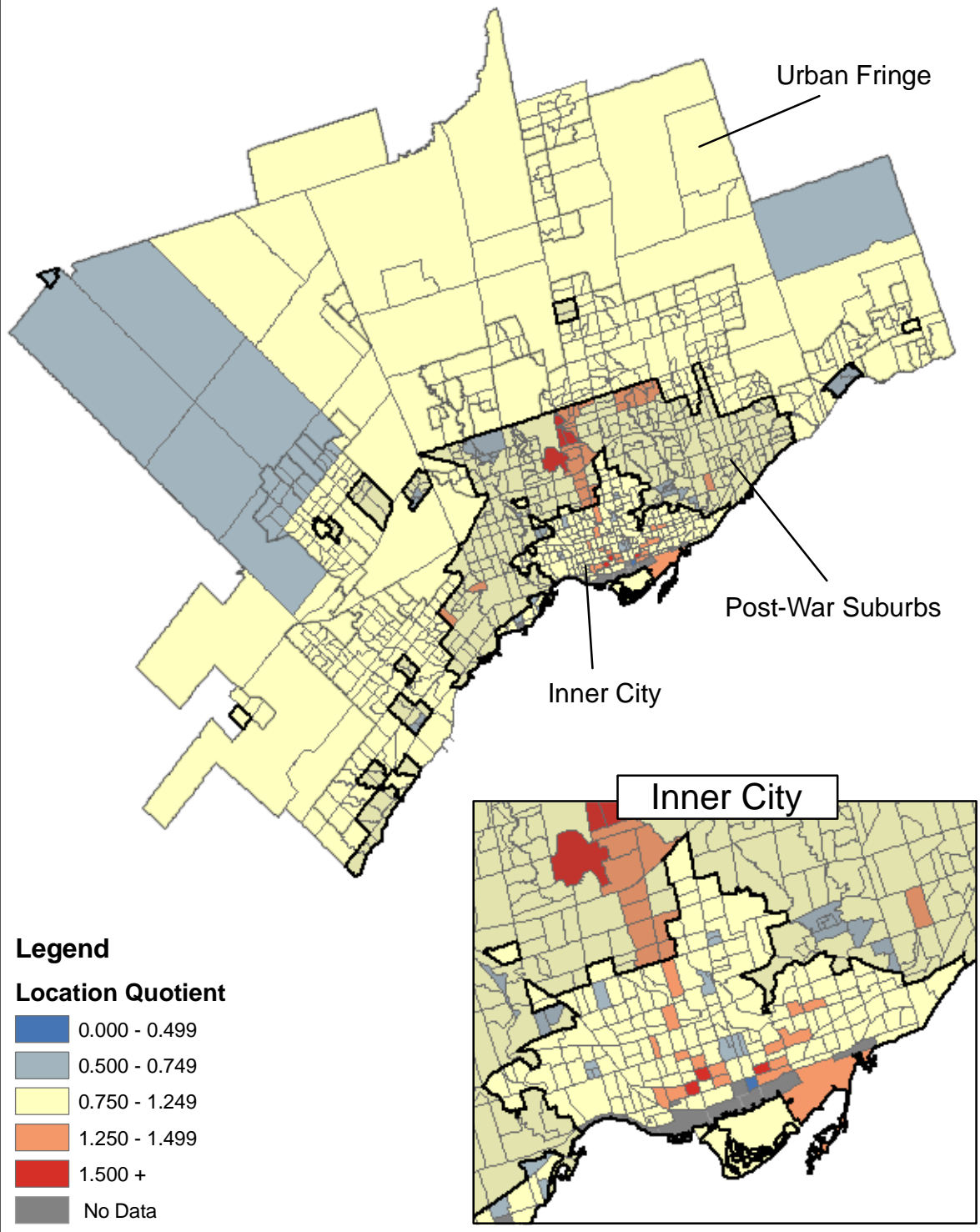
Source: Statistics Canada (2008B, 2007)

Figure 4.31 - 2006 Census  
Manufacturing Workers:  
Local Moran's I of Local Moran's I



Source: Statistics Canada (2007, 1971B)

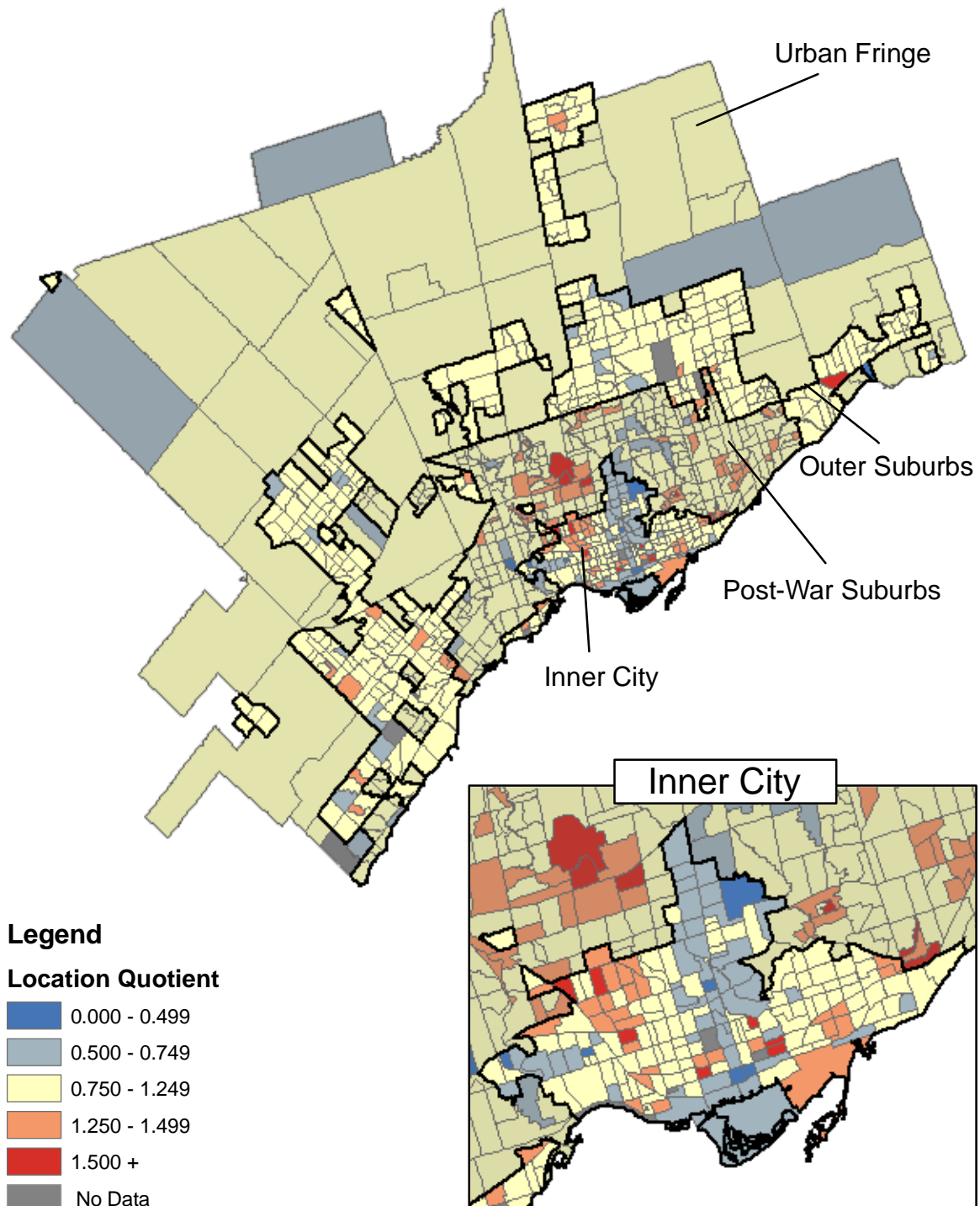
Figure 4.32 - 1971 Census  
Service and Sales Workers:  
Location Quotient





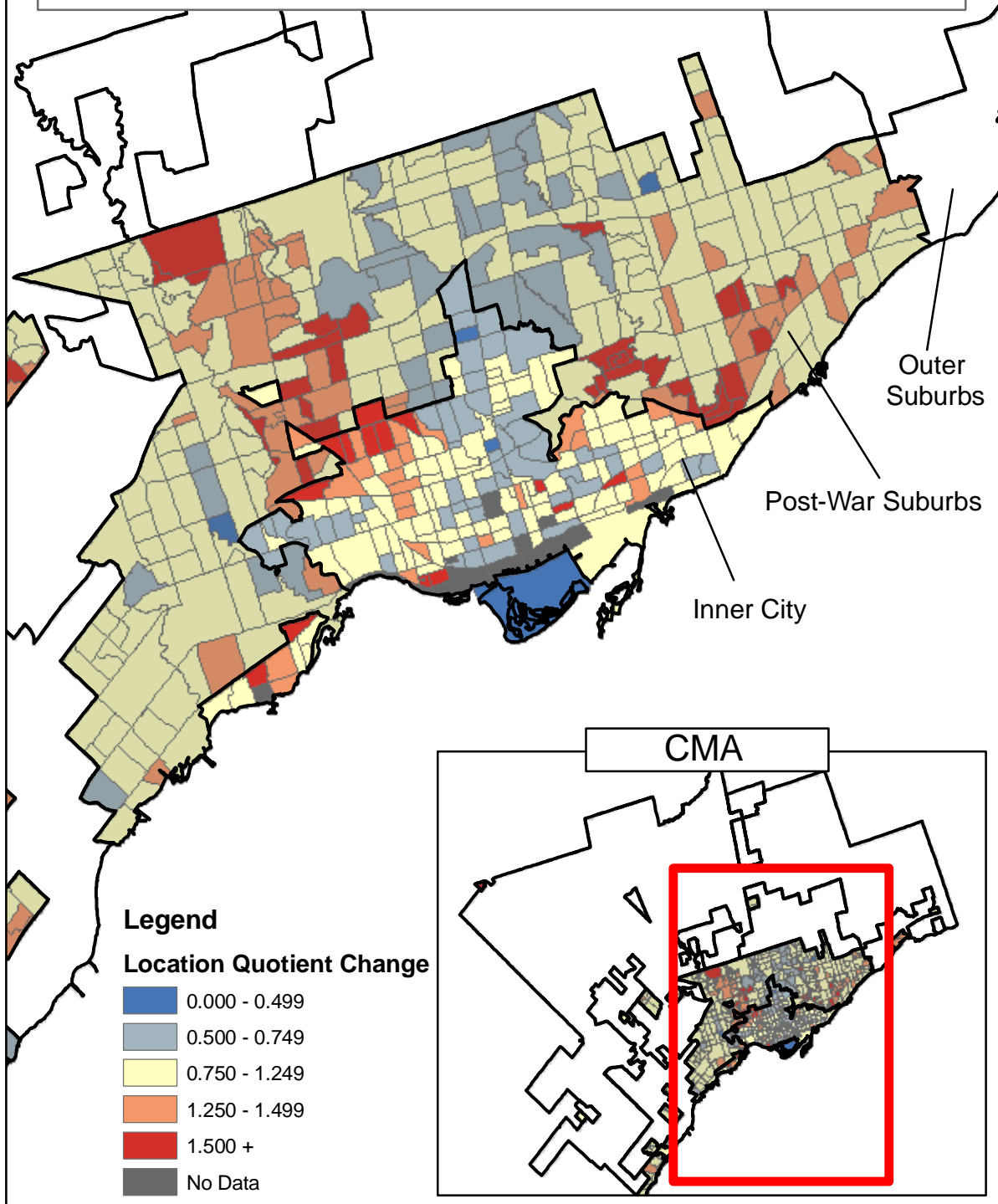
Source: Statistics Canada (2008B, 2007)

Figure 4.33 - 2006 Census  
Service and Sales Workers:  
Location Quotient



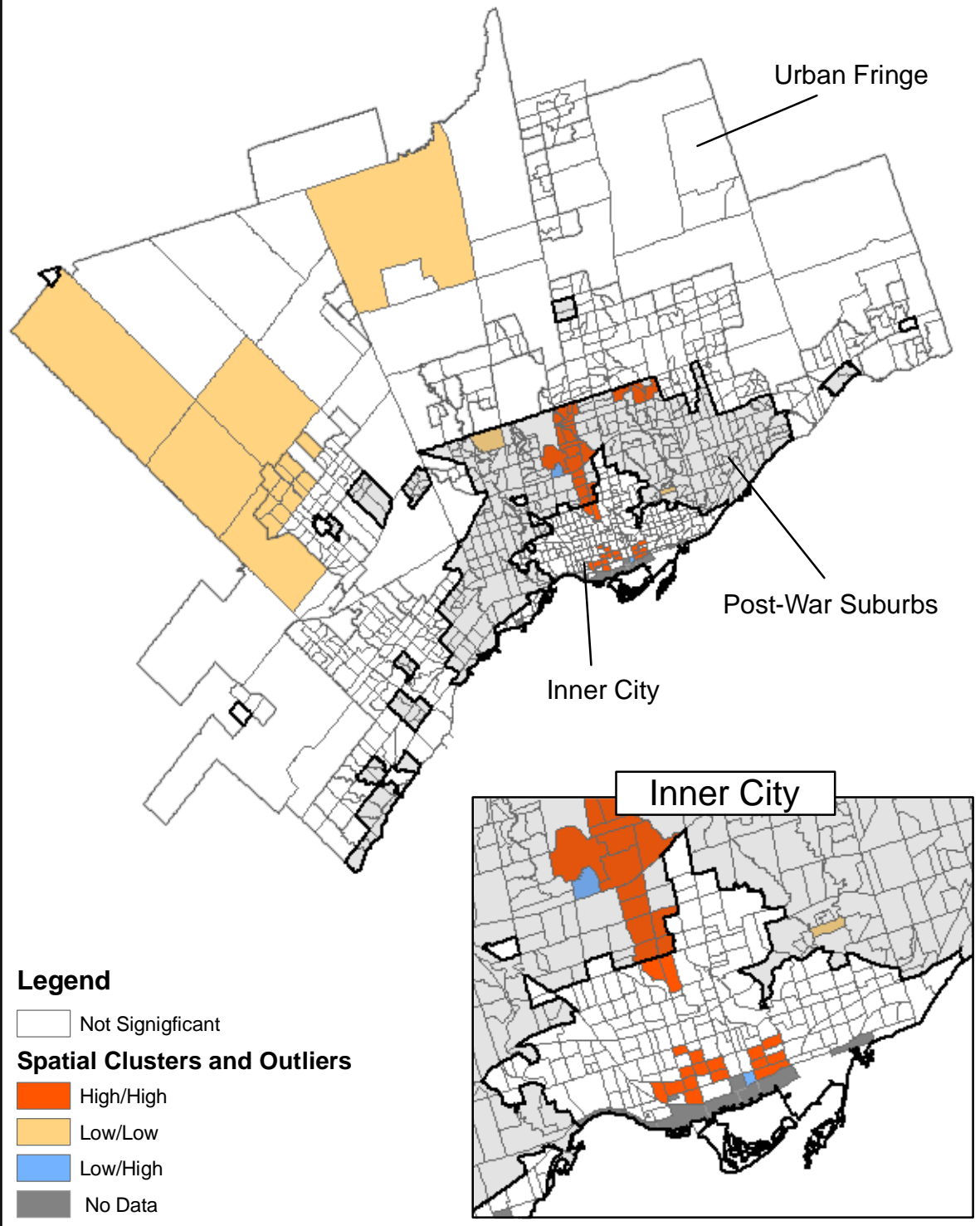
Source: Statistics Canada (2008B, 2007, 1971B)

Figure 4.34 - 1971 to 2006 Censuses  
Service and Sales Workers:  
Change in Location Quotient



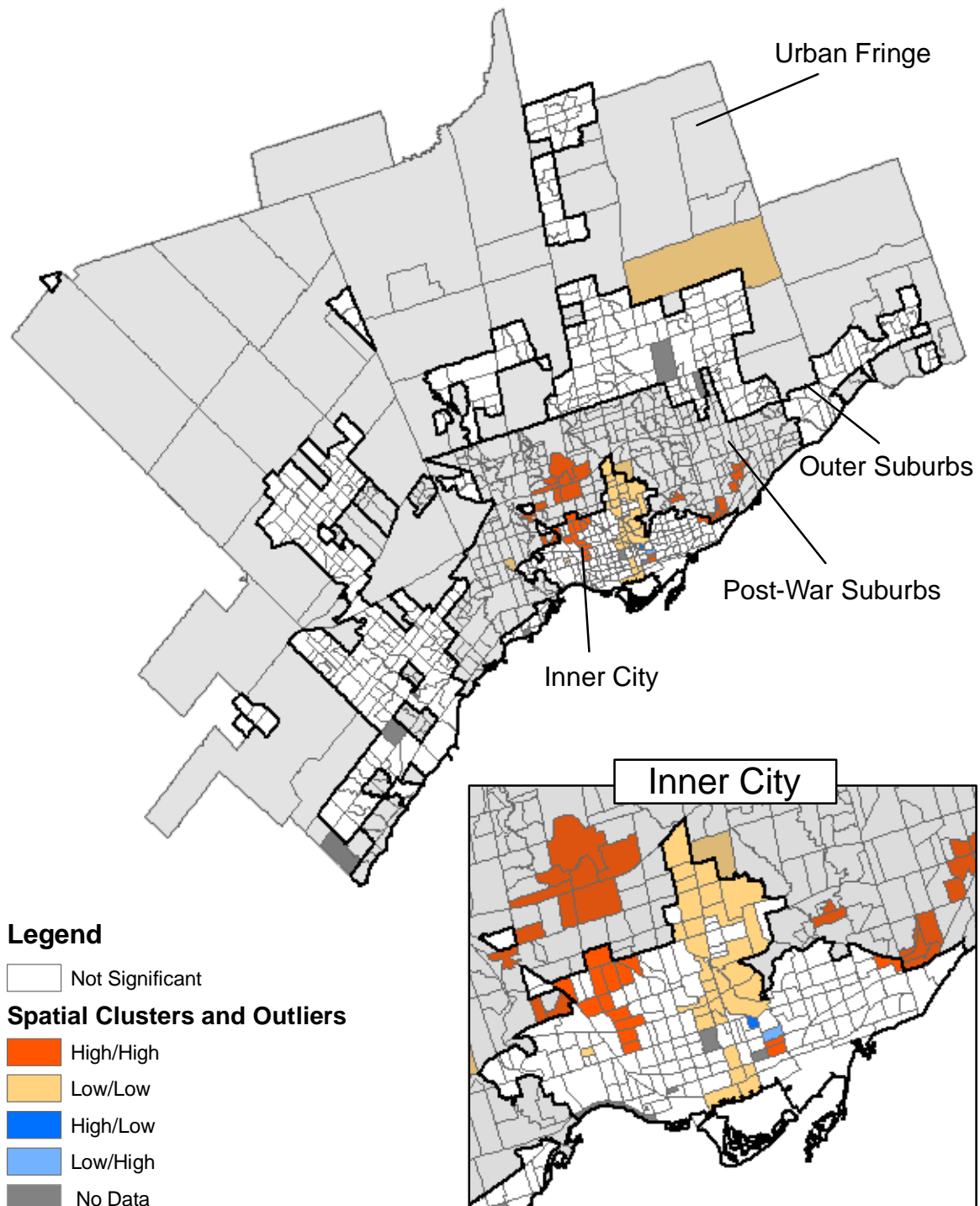
Source: Statistics Canada (2007, 1971B)

Figure 4.35 - 1971 Census  
Service and Sales Workers:  
Local Moran's I of Location Quotient



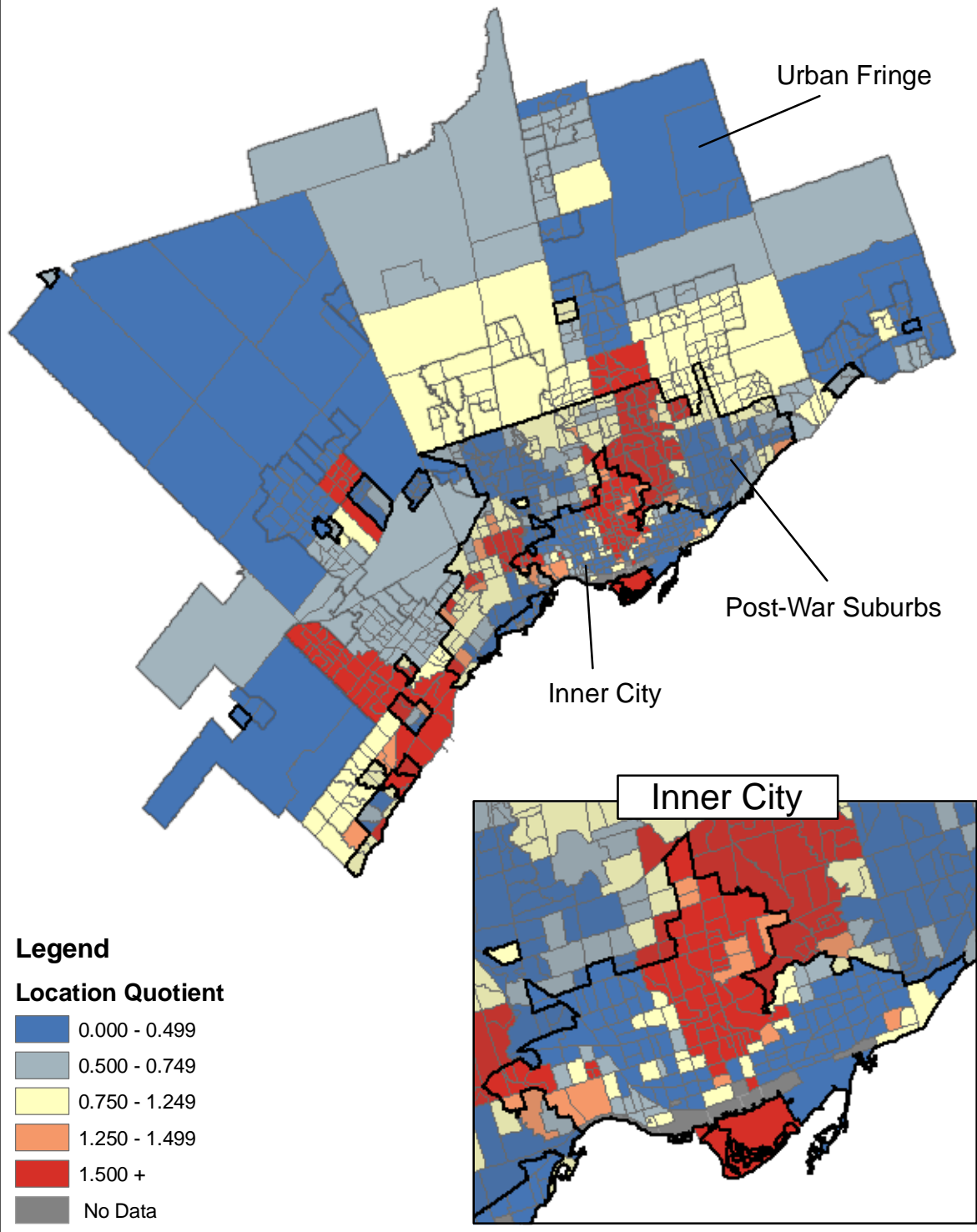
Source: Statistics Canada (2008B, 2007)

Figure 4.36 - 2006 Census  
Service and Sales Workers:  
Local Moran's I of Location Quotient



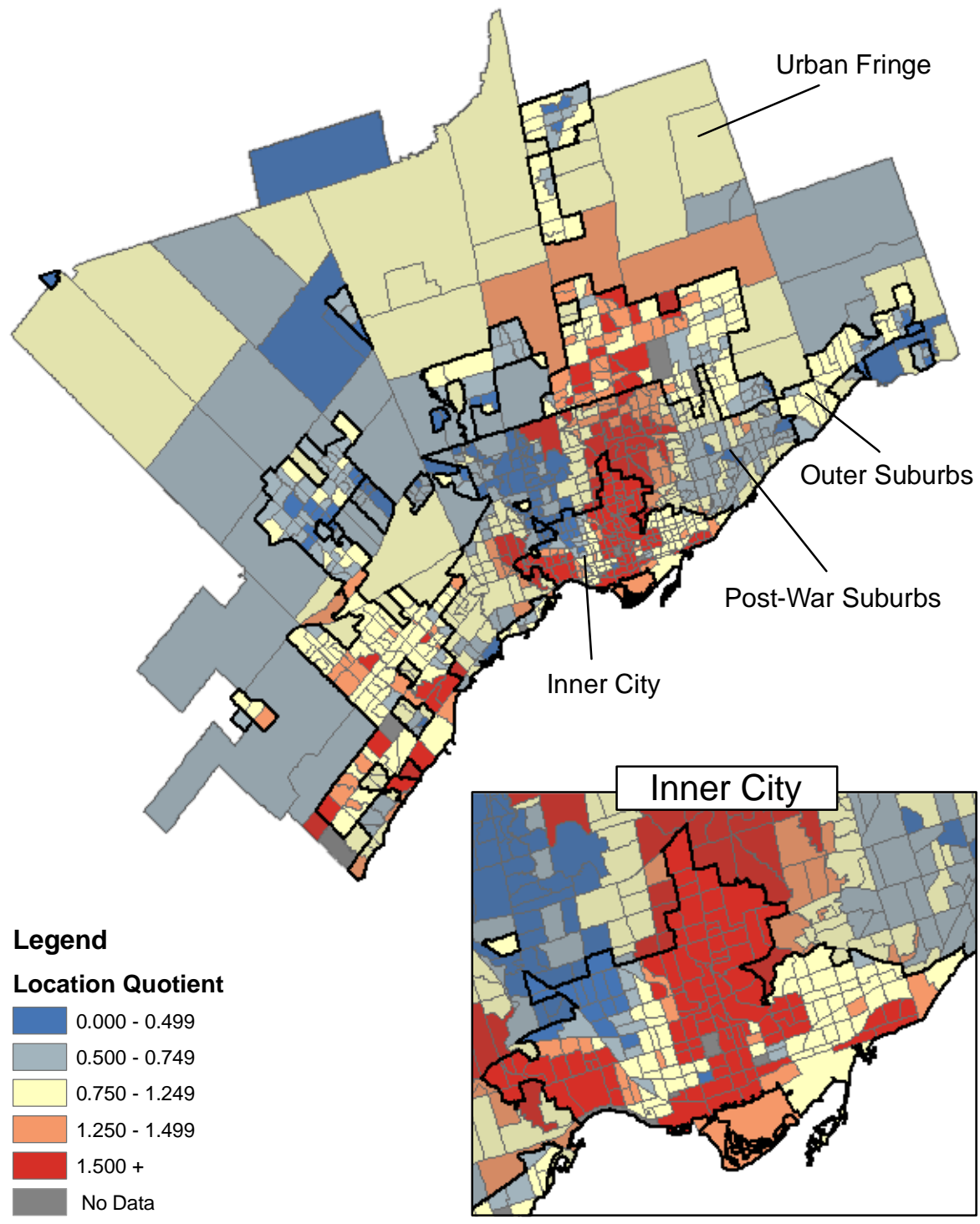
Source: Statistics Canada (2007, 1971B)

Figure 4.37 - 1971 Census  
Residents with a University Degree:  
Location Quotient



Source: Statistics Canada (2008B, 2007)

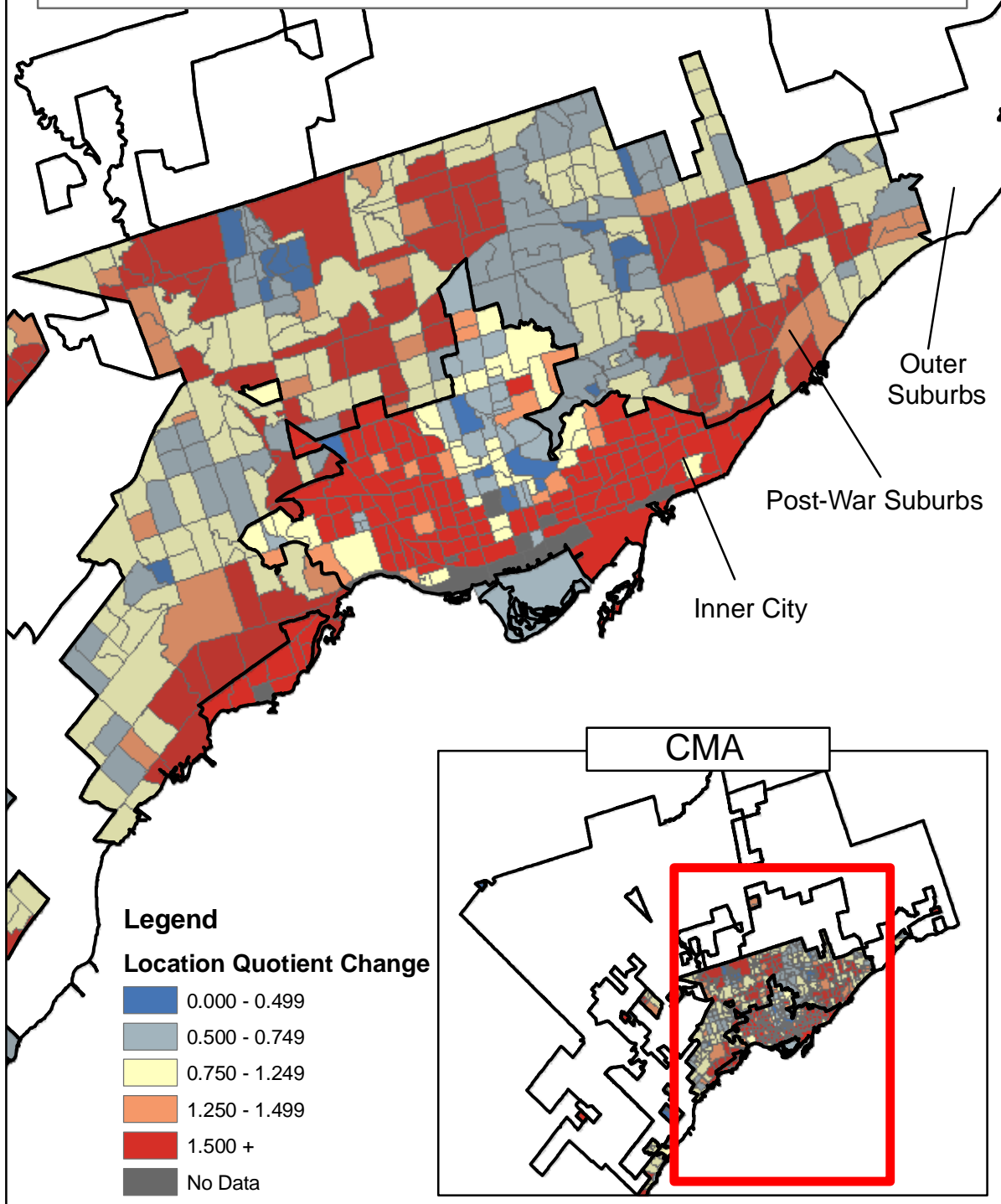
Figure 4.38 - 2006 Census  
Residents with a University Degree:  
Location Quotient





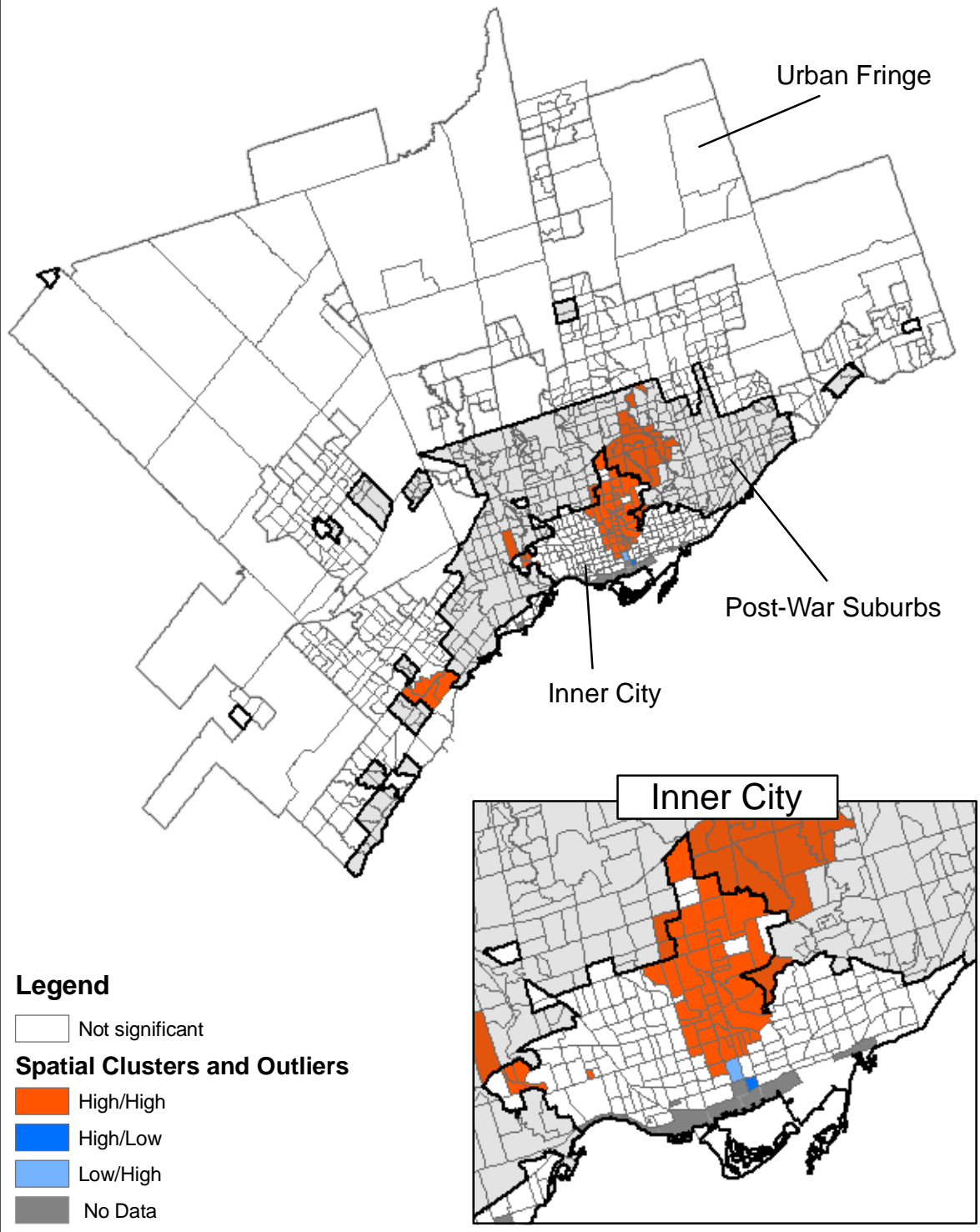
Source: Statistics Canada (2008B, 2007, 1971B)

## Figure 4.39 - 1971 to 2006 Censuses Residents with a University Degree: Change in Location Quotient



Source: Statistics Canada (2007, 1971B)

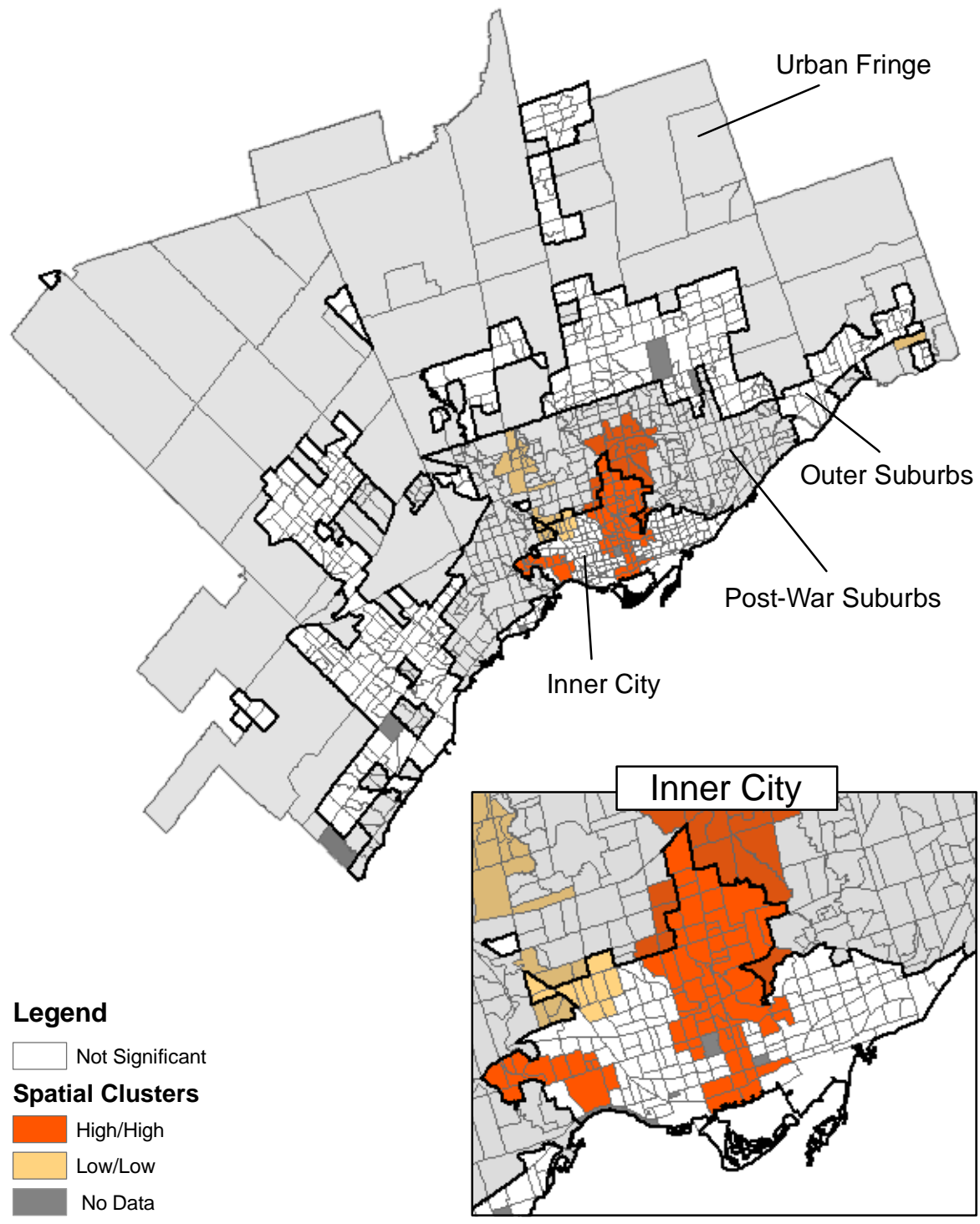
Figure 4.40 - 1971 Census  
Residents with a University Degree:  
Local Moran's I of Location Quotient





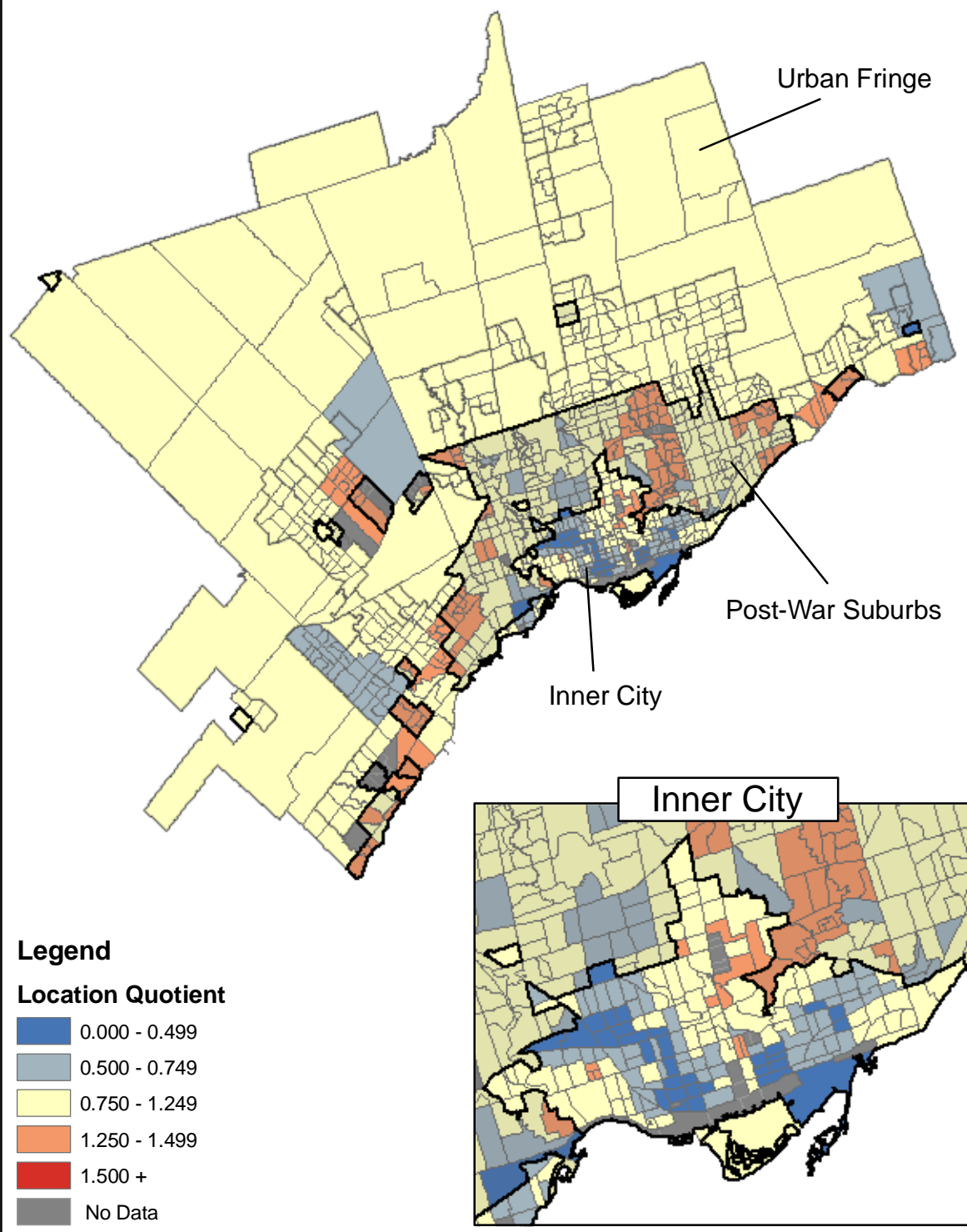
Source: Statistics Canada (2008B, 2007)

Figure 4.41 - 2006 Census  
Residents with a University Degree:  
Local Moran's I of Location Quotient



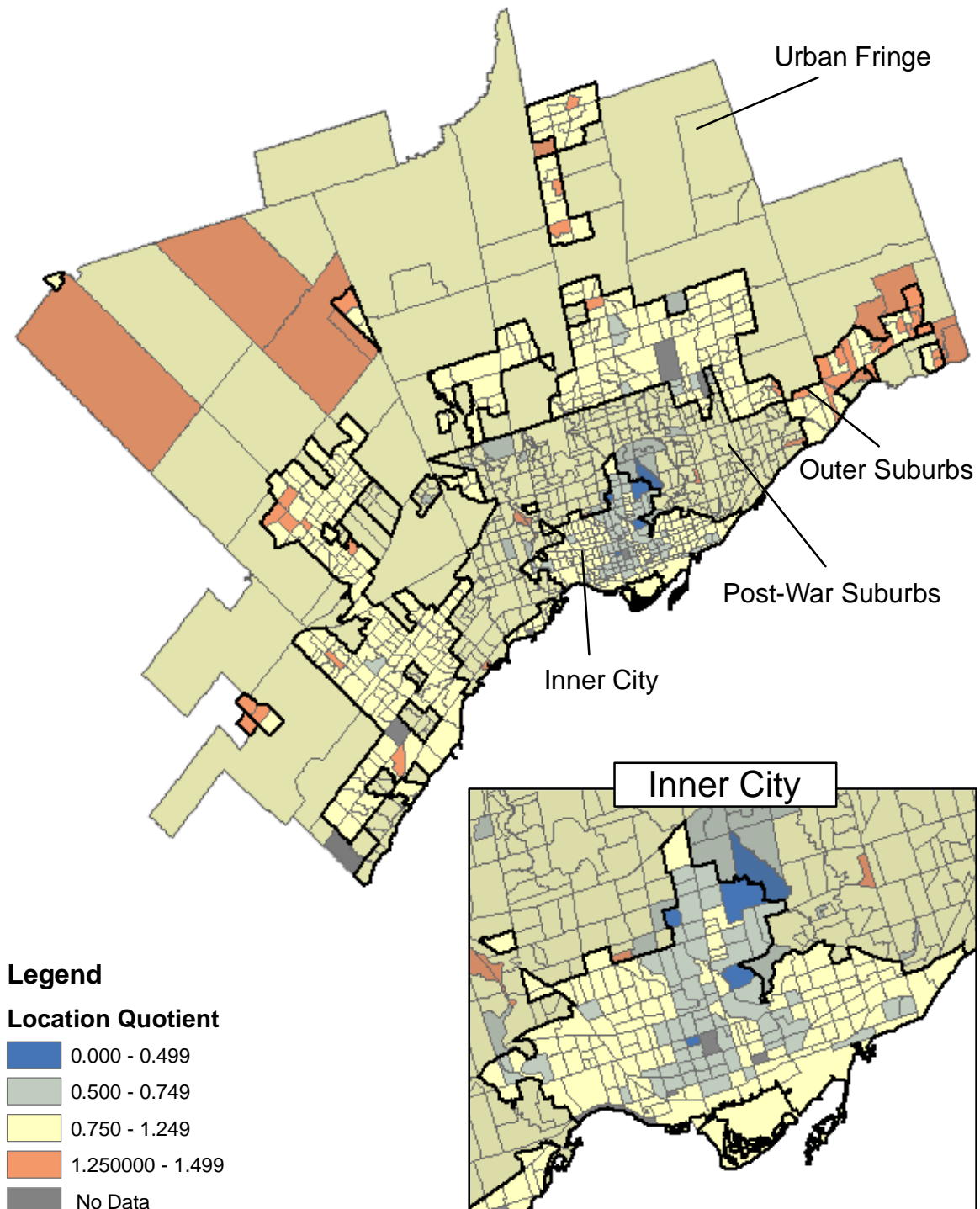
Source: Statistics Canada (2007, 1971B)

Figure 4.42 - 1971 Census  
Residents with a Post-Secondary Certificate or Diploma:  
Location Quotient



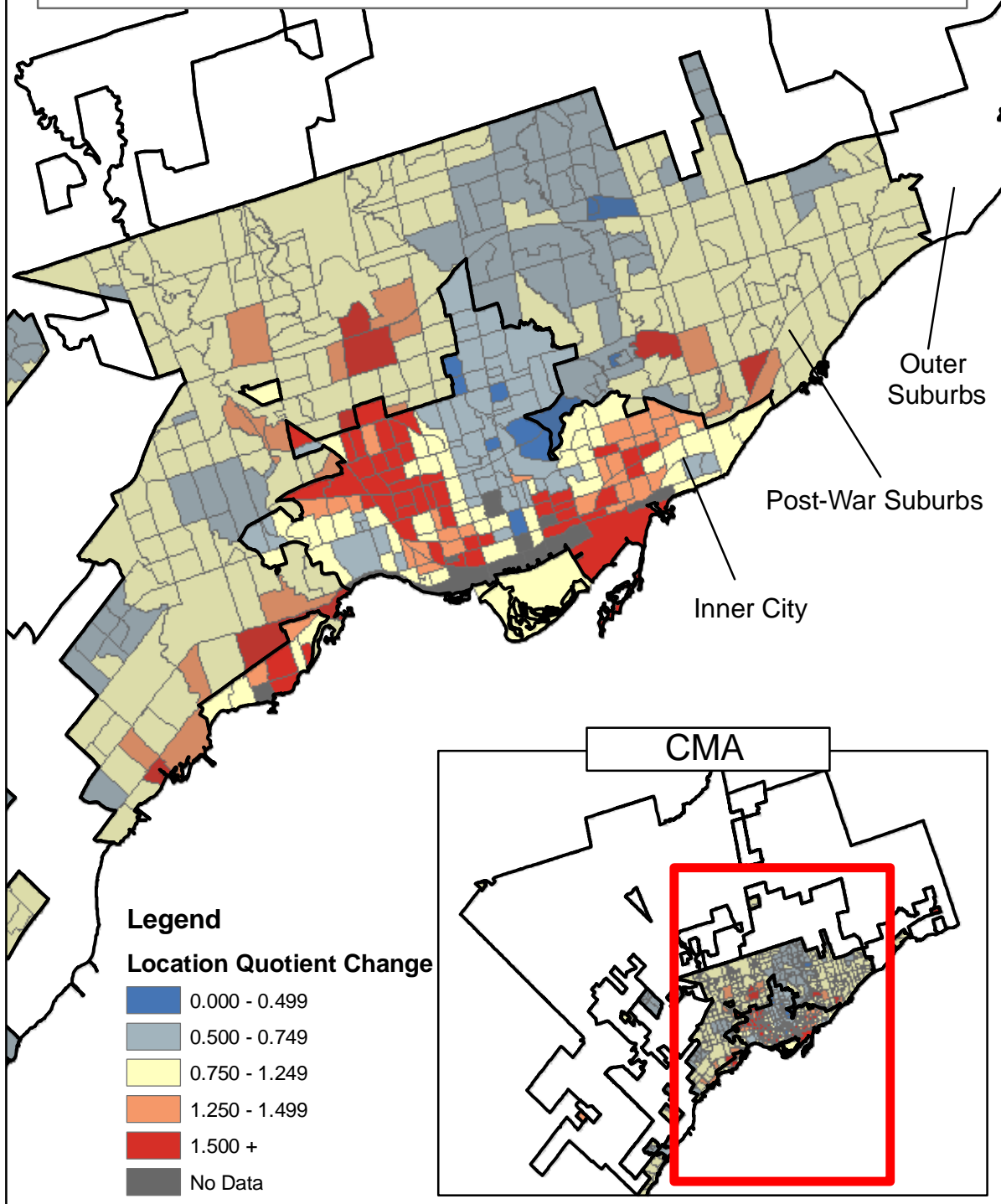
Source: Statistics Canada (2008B, 2007)

Figure 4.43 - 2006 Census  
Residents with a Post-Secondary Certificate or Diploma:  
Location Quotient



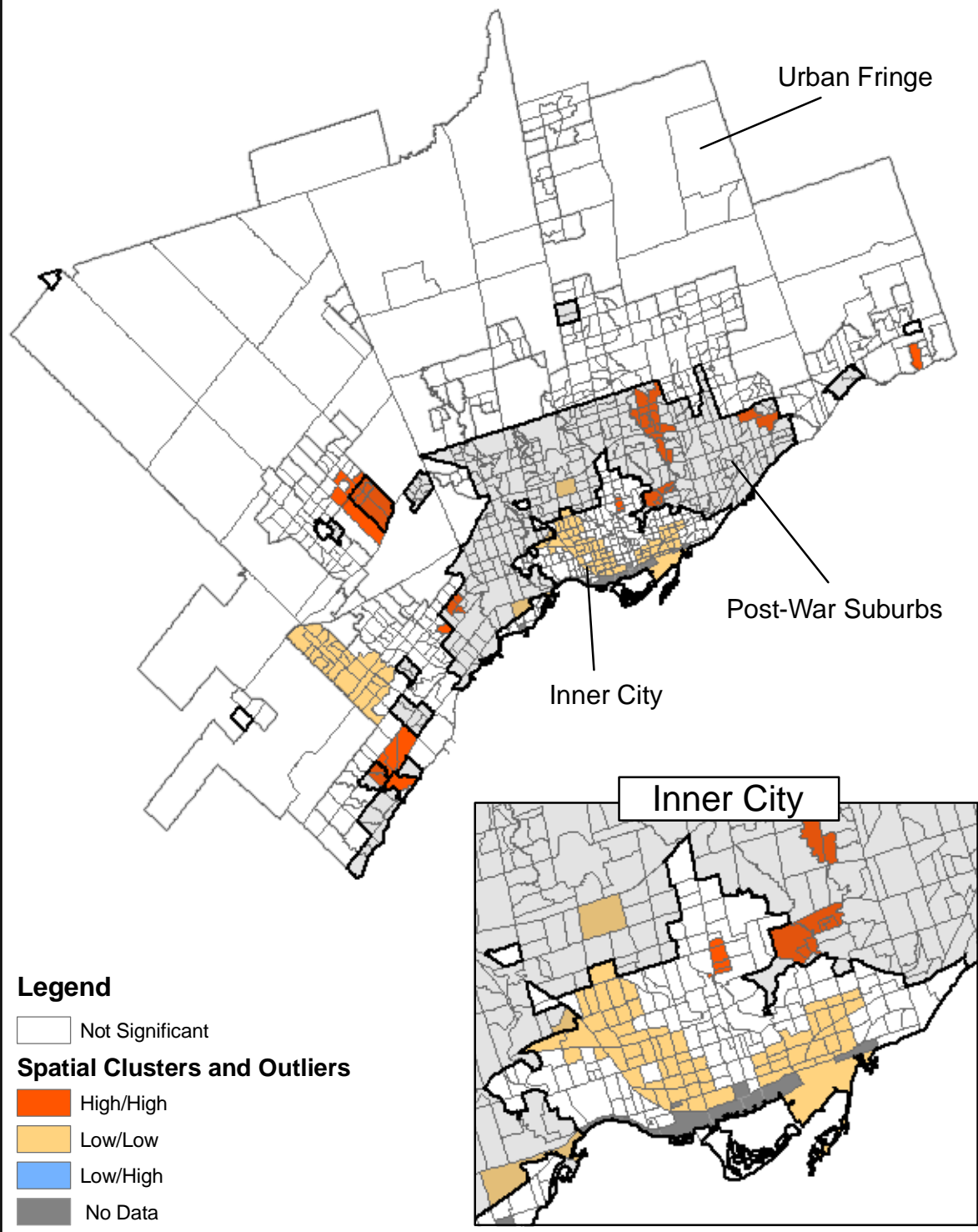
Source: Statistics Canada (2008B, 2007, 1971B)

Figure 4.44 - 1971 to 2006 Censuses  
Residents with a Post-Secondary Certificate or Diploma:  
Change in Location Quotient



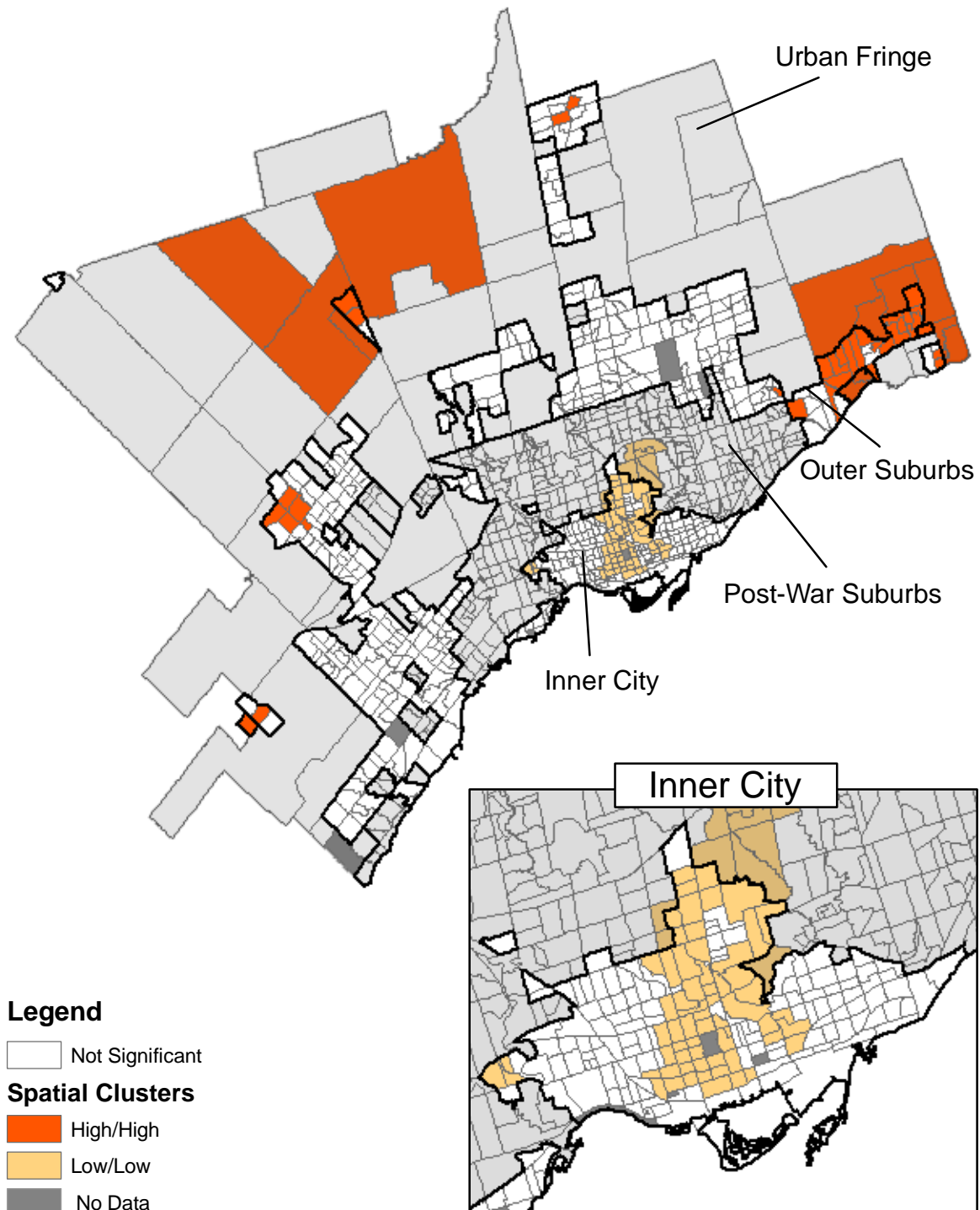
Source: Statistics Canada (2007, 1971B)

Figure 4.45 - 1971 Census  
Residents with a Post-Secondary Certificate or Diploma:  
Local Moran's I of Location Quotient



Source: Statistics Canada (2008B, 2007)

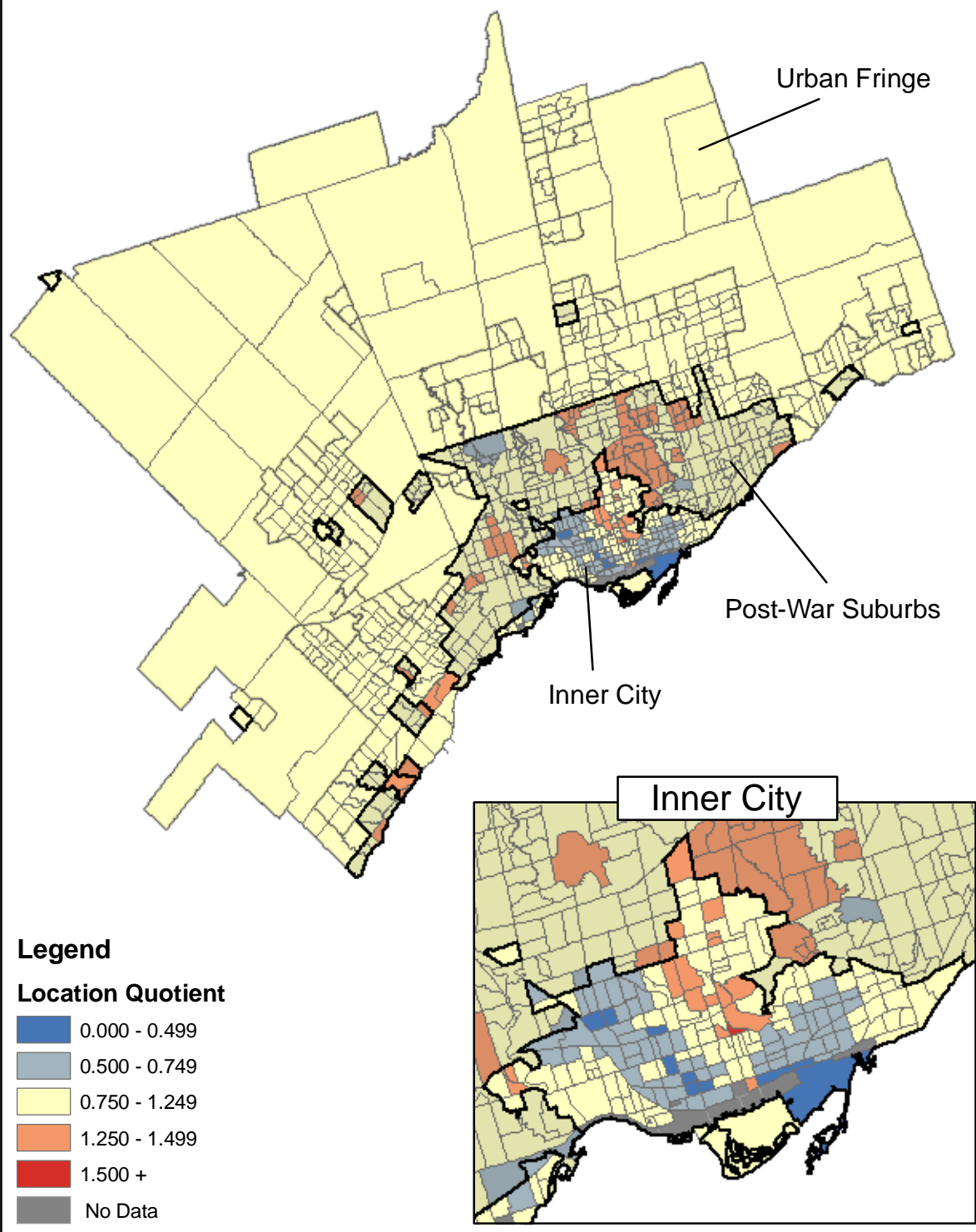
Figure 4.46 - 2006 Census  
Residents with a Post-Secondary Certificate or Diploma:  
Local Moran's I of Location Quotient





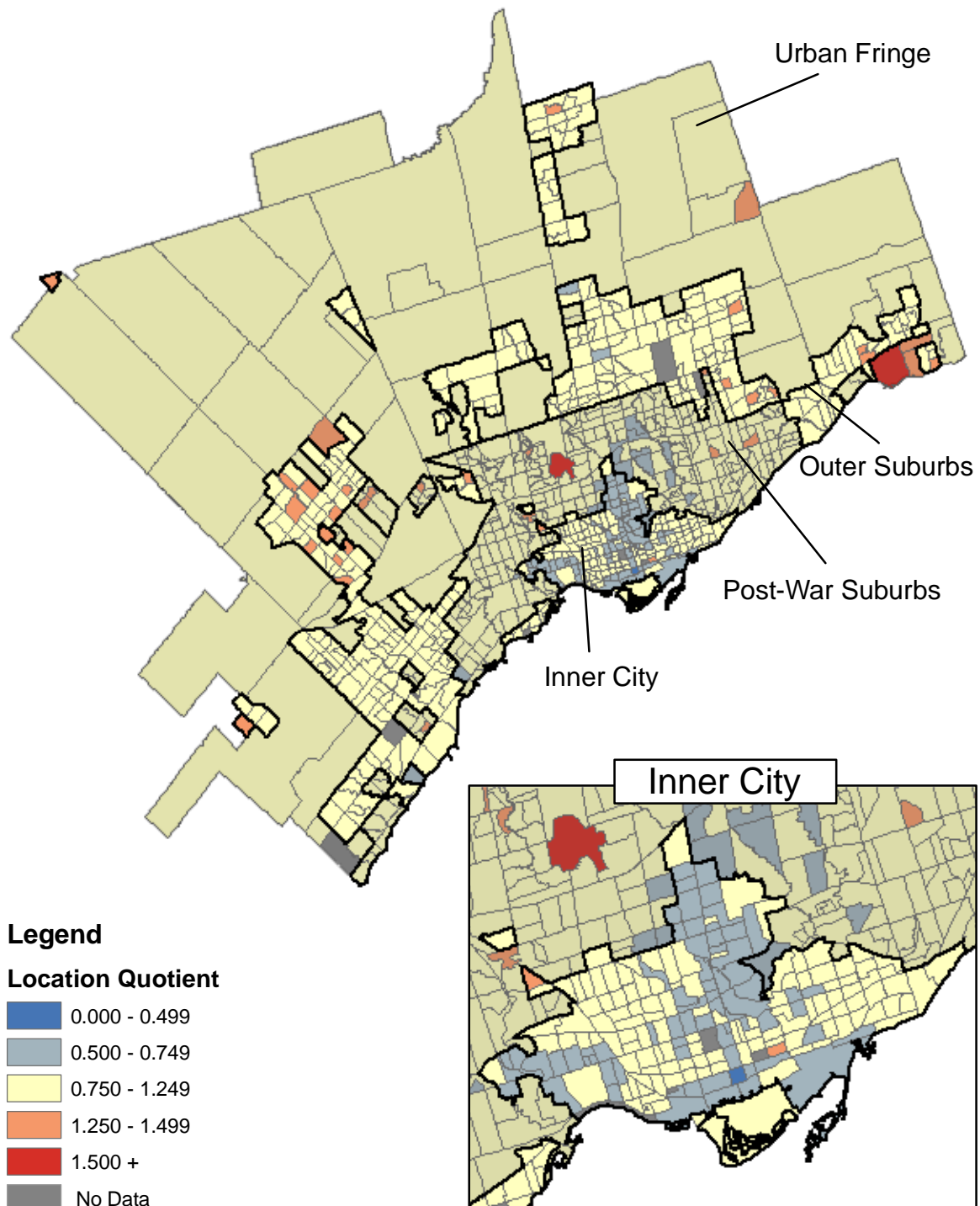
Source: Statistics Canada (2007, 1971B)

Figure 4.47 - 1971 Census  
Residents with a High School Diploma:  
Location Quotient



Source: Statistics Canada (2008B, 2007)

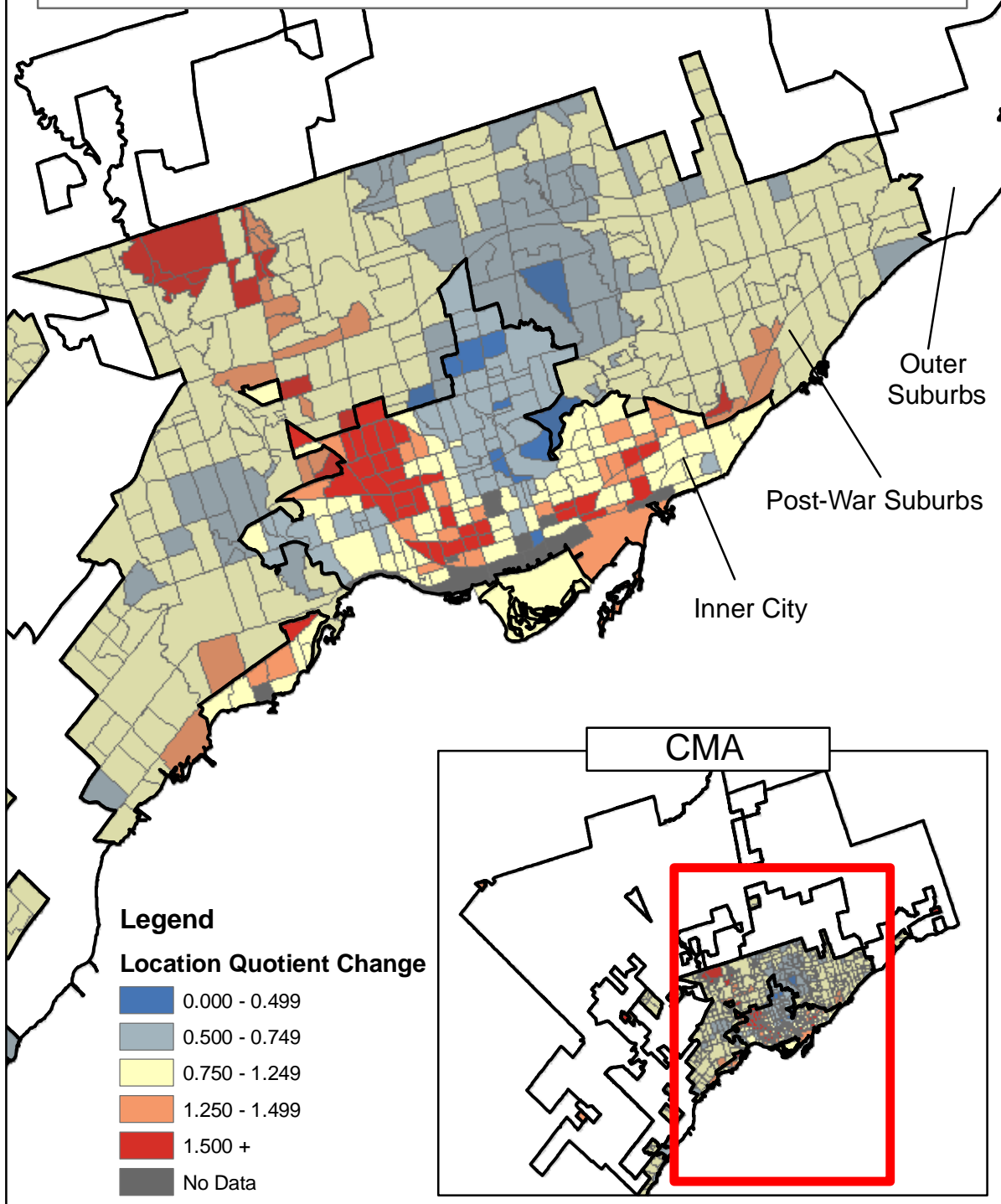
Figure 4.48 - 2006 Census  
Residents with a High School Diploma:  
Location Quotient





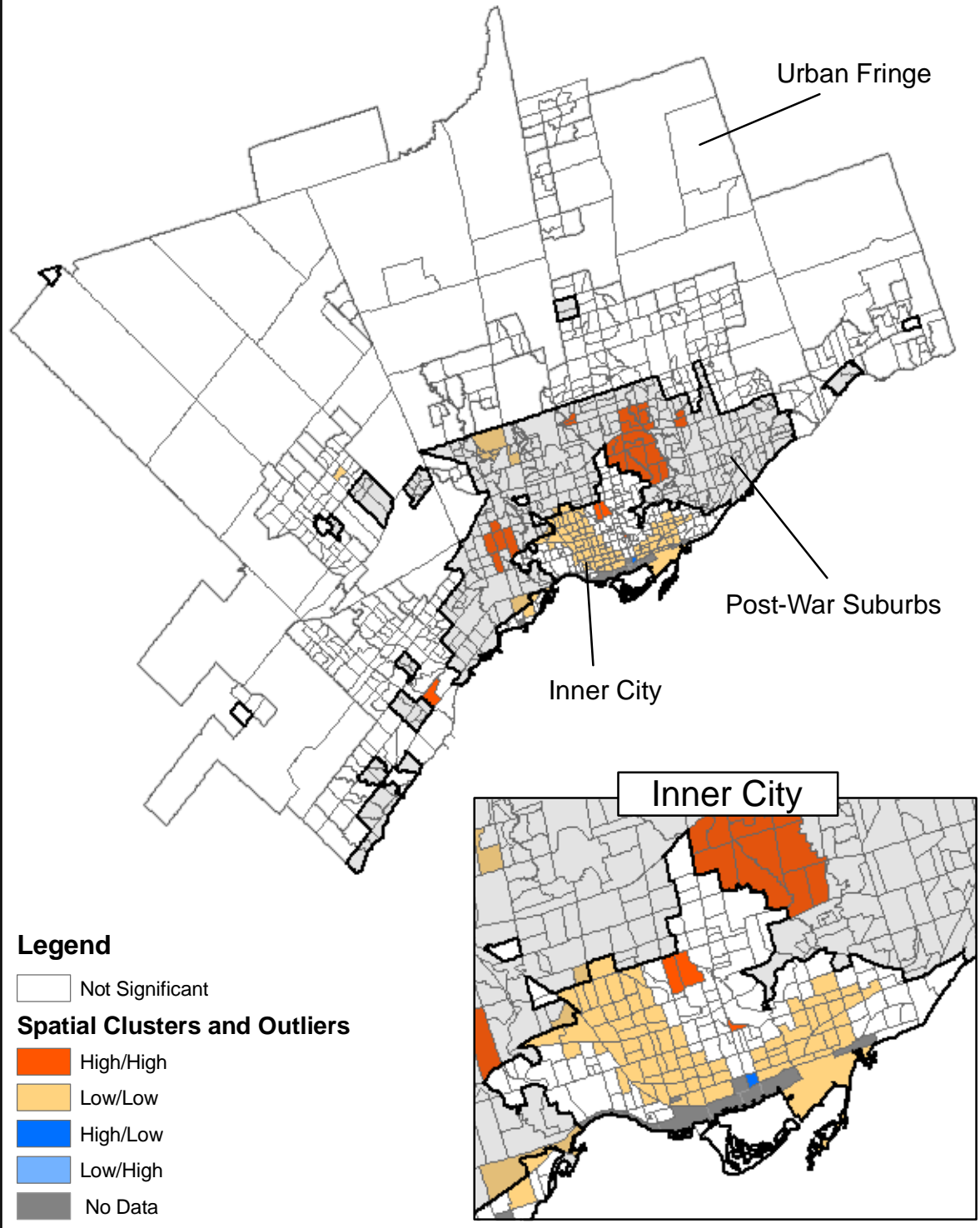
Source: Statistics Canada (2008B, 2007, 1971B)

Figure 4.49 - 1971 to 2006 Censuses  
Residents with a High School Diploma:  
Change in Location Quotient



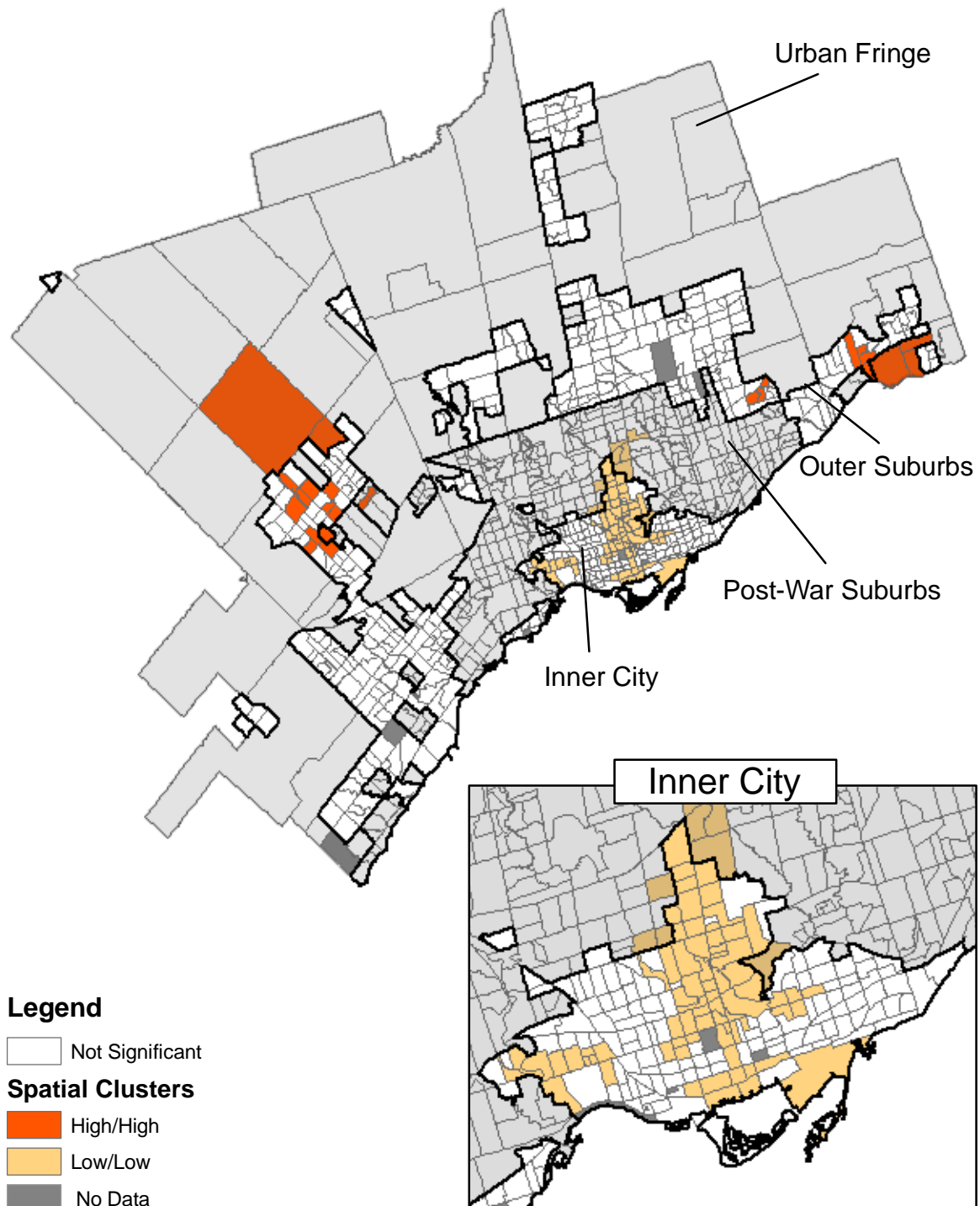
Source: Statistics Canada (2007, 1971B)

Figure 4.50 - 1971 Census  
Residents with a High School Diploma:  
Local Moran's I of Location Quotient



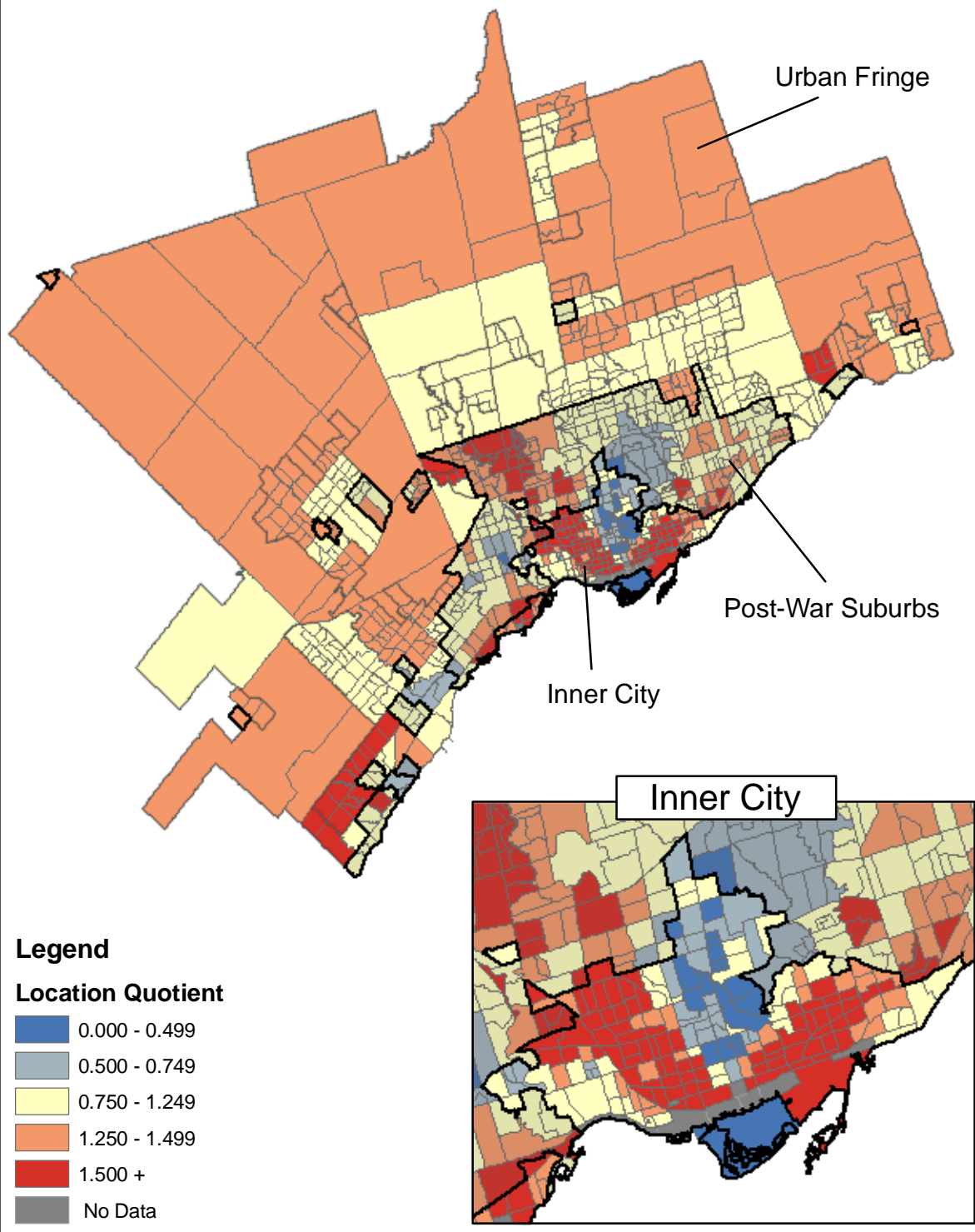
Source: Statistics Canada (2008B, 2007)

Figure 4.51 - 2006 Census  
Residents with a Highschool Diploma:  
Local Moran's I of Location Quotient



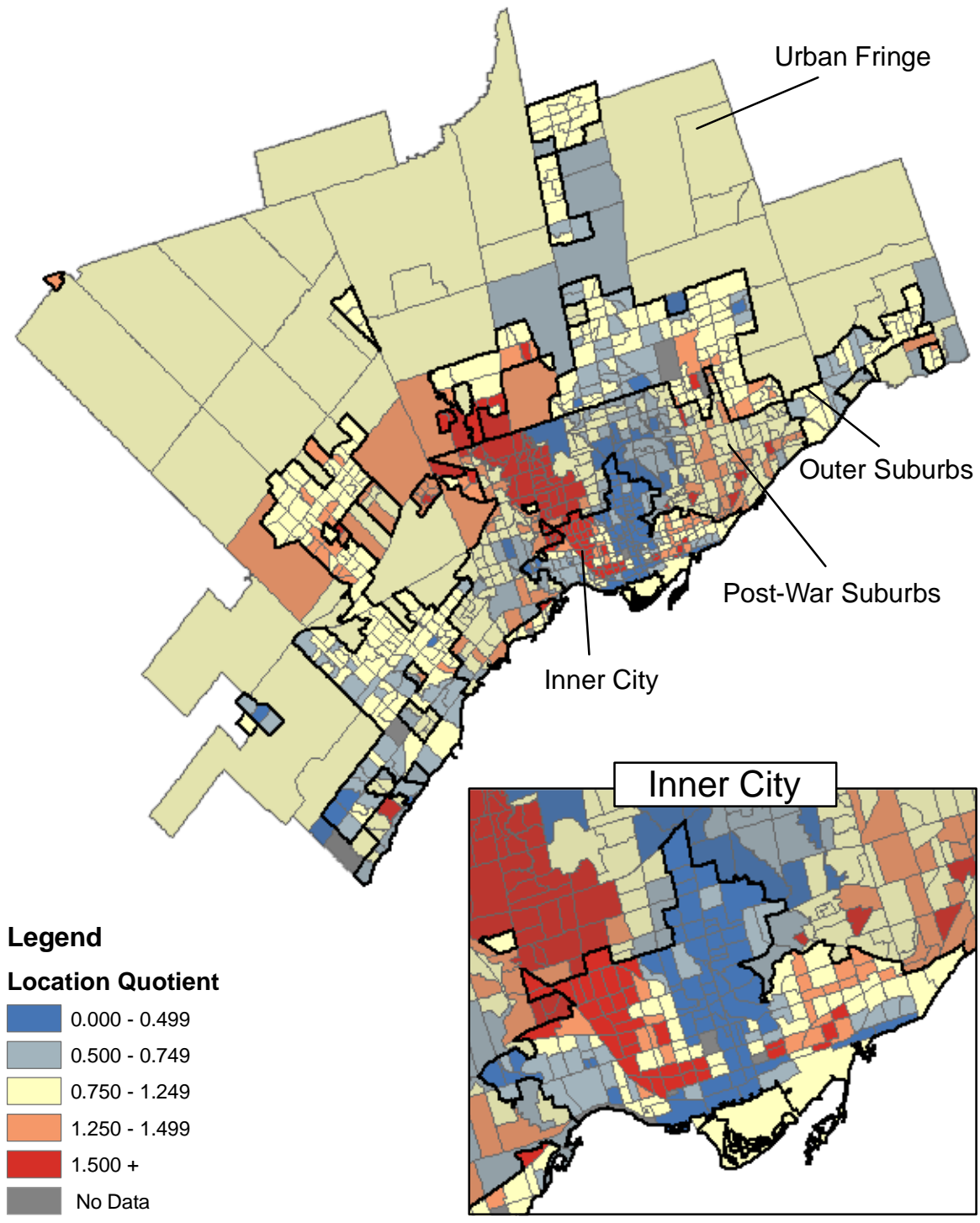
Source: Statistics Canada (2007, 1971B)

Figure 4.52 - 1971 Census  
Residents with No Certificate, Degree or Diploma:  
Location Quotient



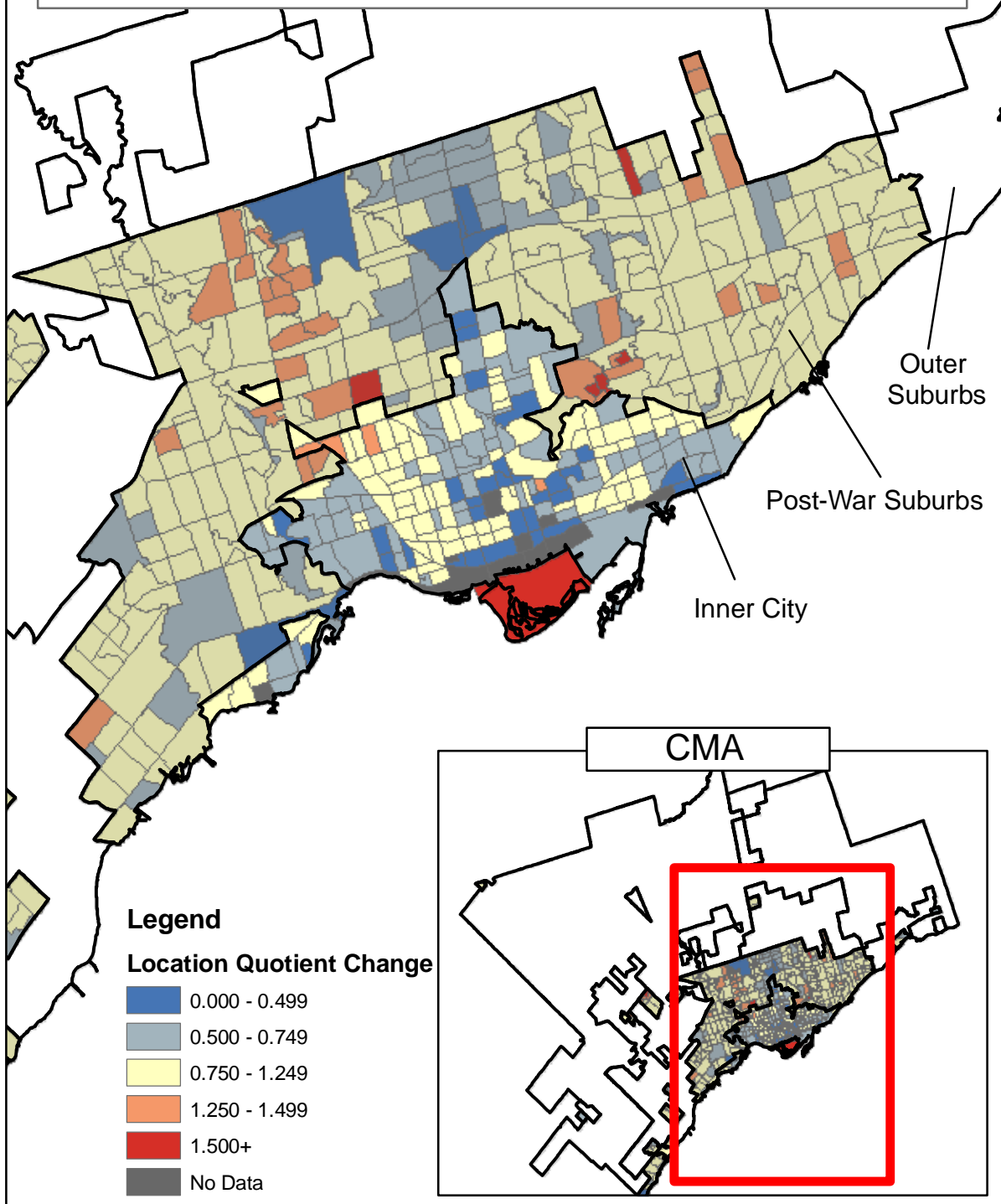
Source: Statistics Canada (2008B, 2007)

Figure 4.53 - 2006 Census  
Residents with No Certificate, Degree or Diploma:  
Location Quotient



Source: Statistics Canada (2008B, 2007, 1971B)

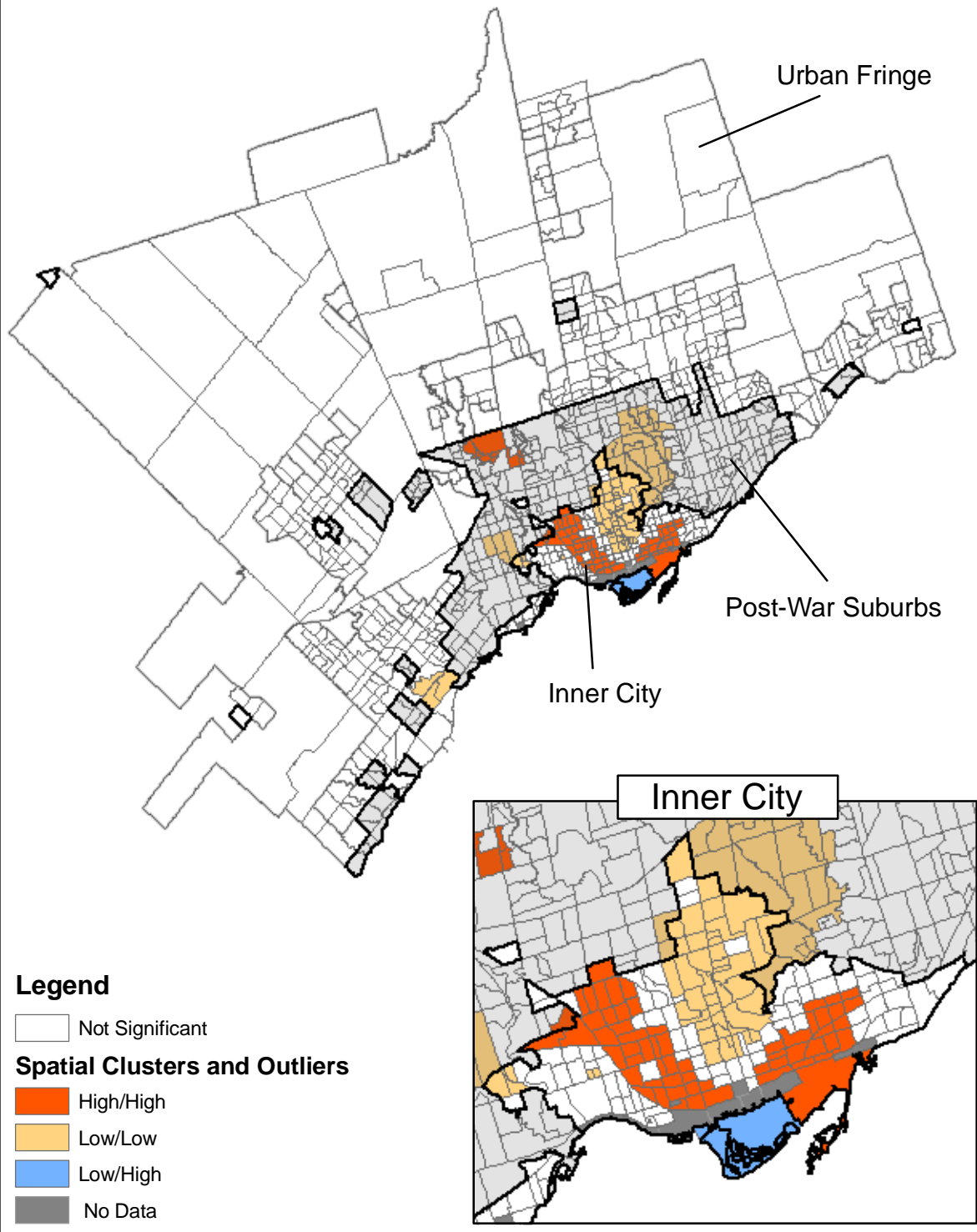
Figure 4.54 - 1971 to 2006 Censuses  
Residents with No Certificate, Degree or Diploma:  
Change in Location Quotient





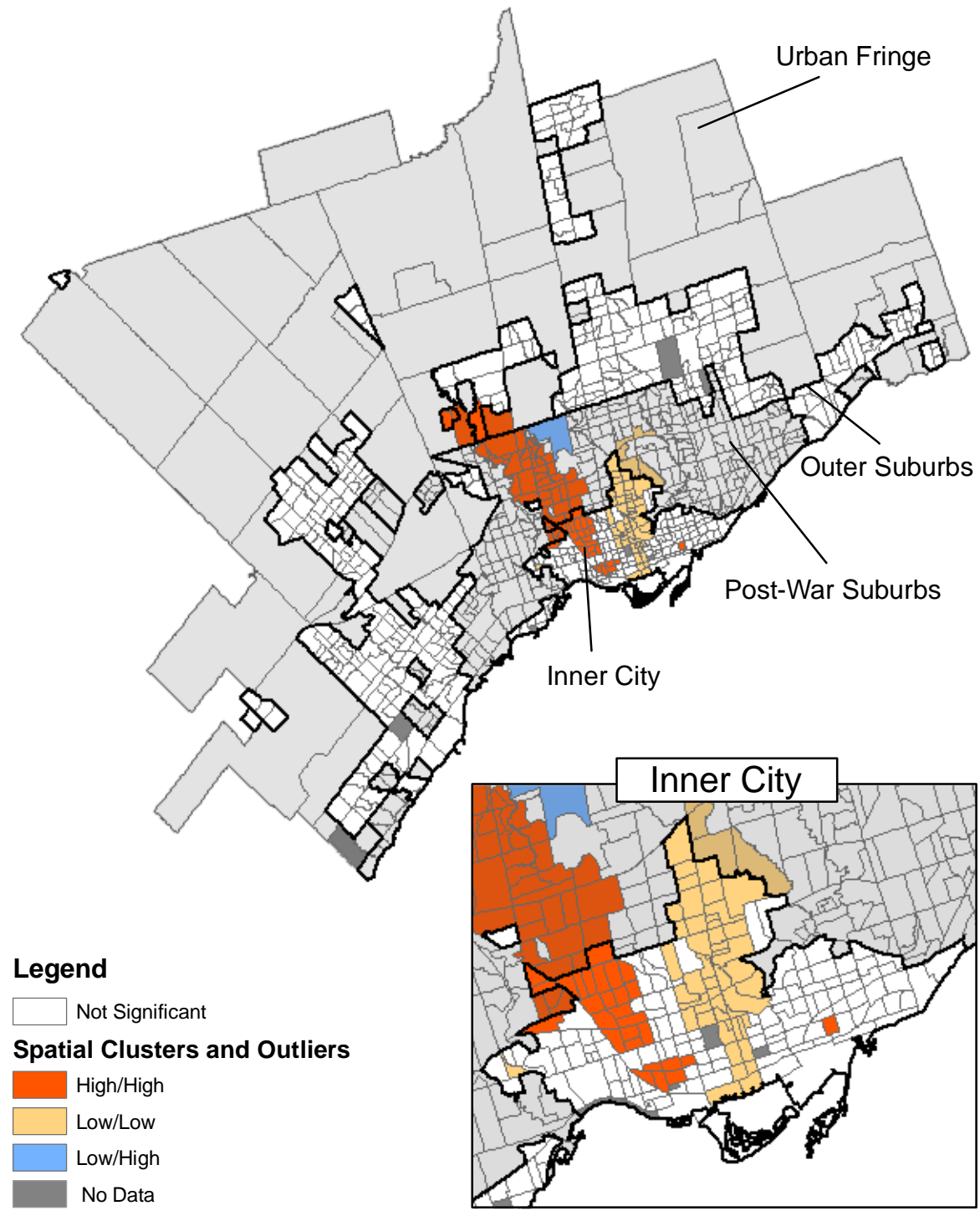
Source: Statistics Canada (2007, 1971B)

Figure 4.55 - 1971 Census  
Residents with No Certificate, Degree or Diploma:  
Local Moran's I of Location Quotient



Source: Statistics Canada (2008B, 2007)

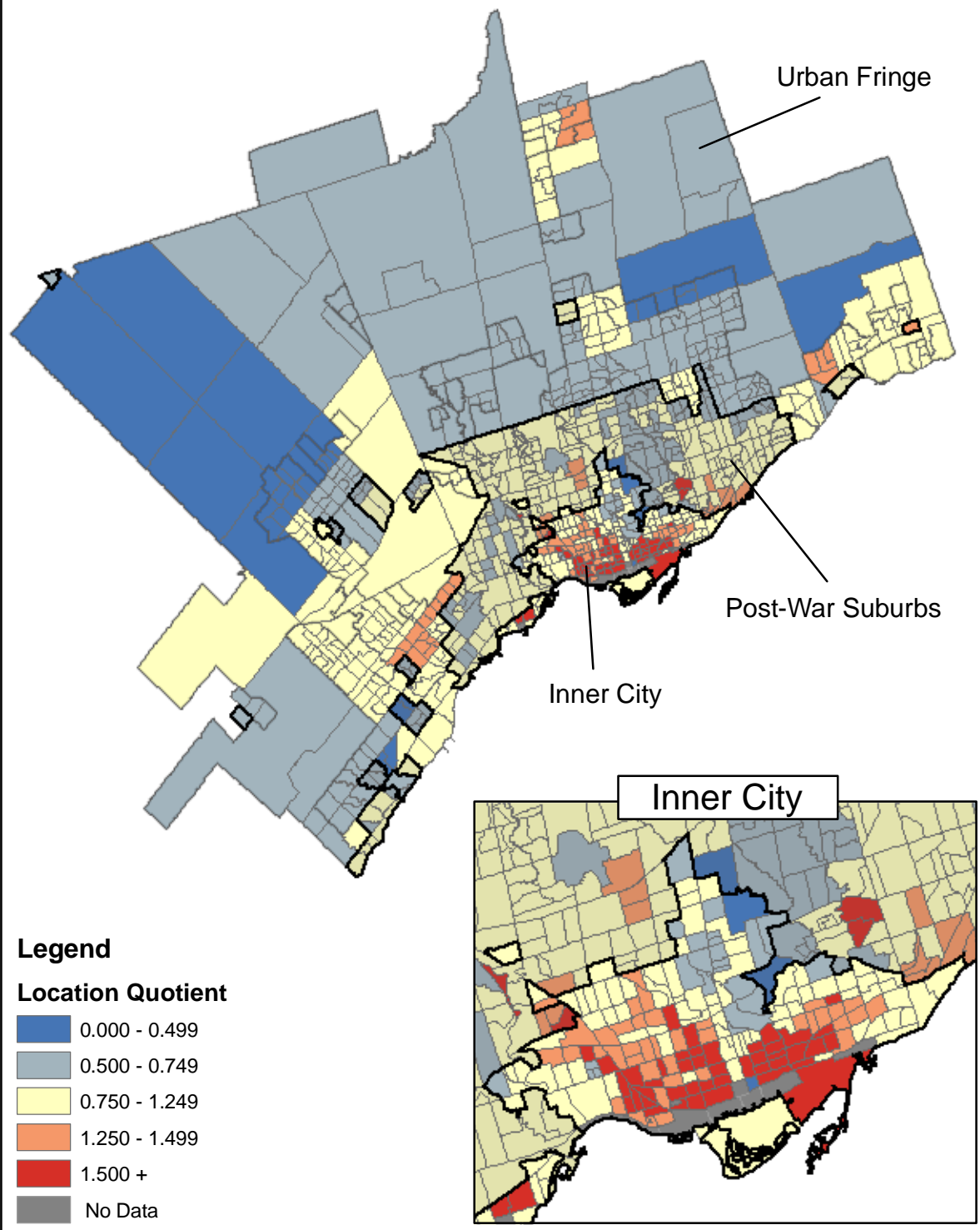
Figure 4.56 - 2006 Census  
Residents with No Certificate, Degree or Diploma:  
Local Moran's I of Location Quotient





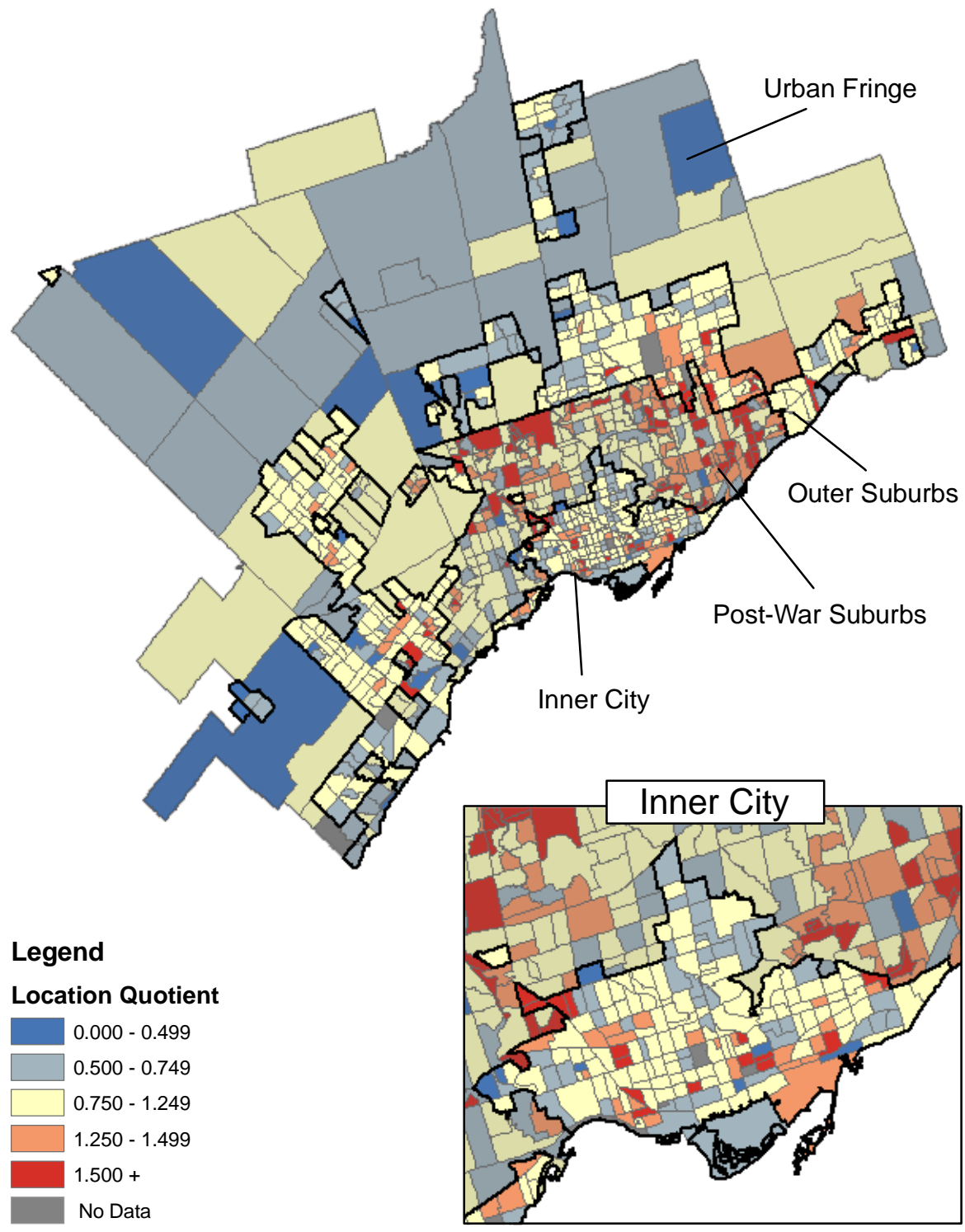
Source: Statistics Canada (2007, 1971B)

Figure 4.57 - 1971 Census  
Unemployment Rate:  
Location Quotient



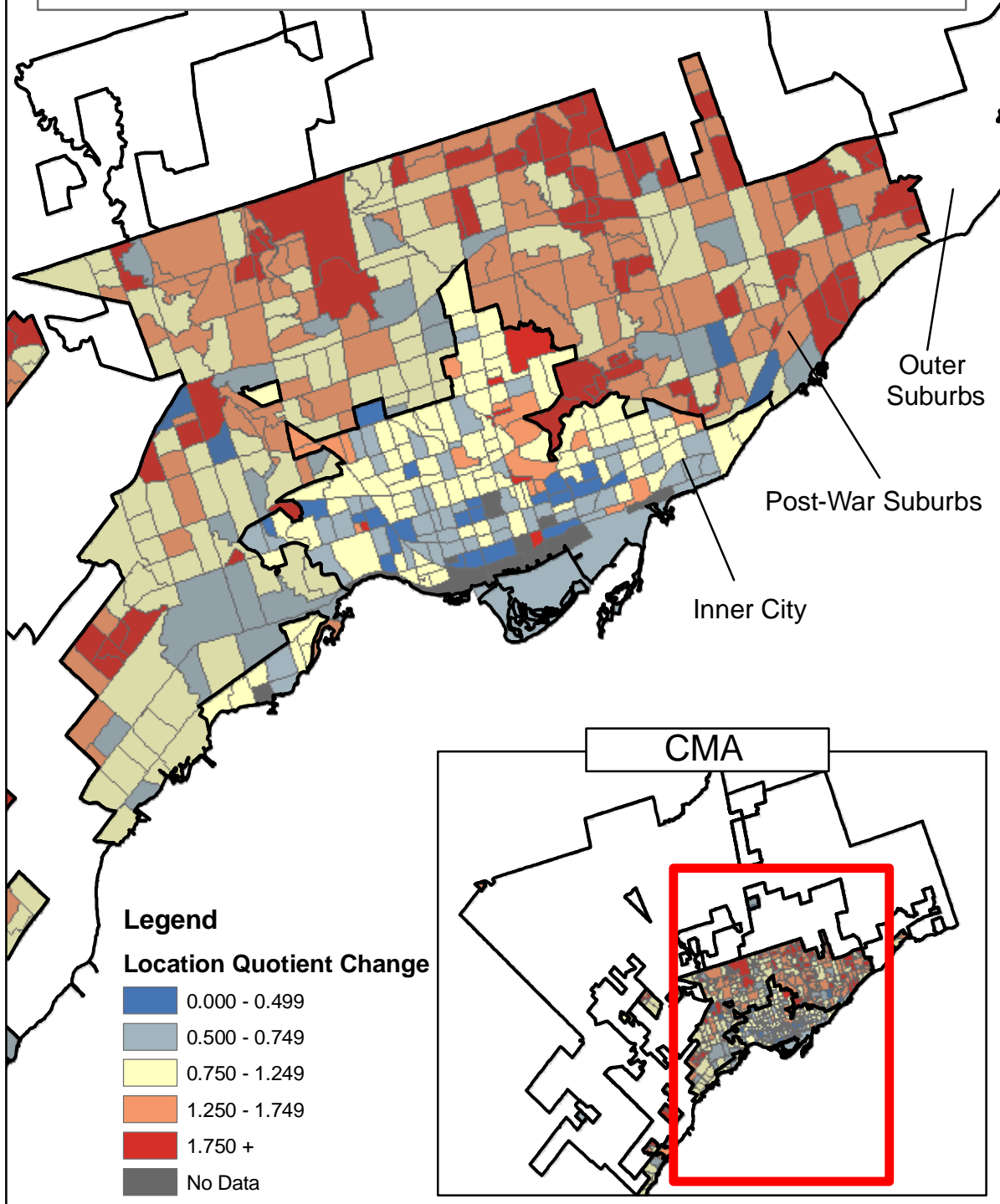
Source: Statistics Canada (2008B, 2007)

Figure 4.58 - 2006 Census  
Unemployment Rate:  
Location Quotient



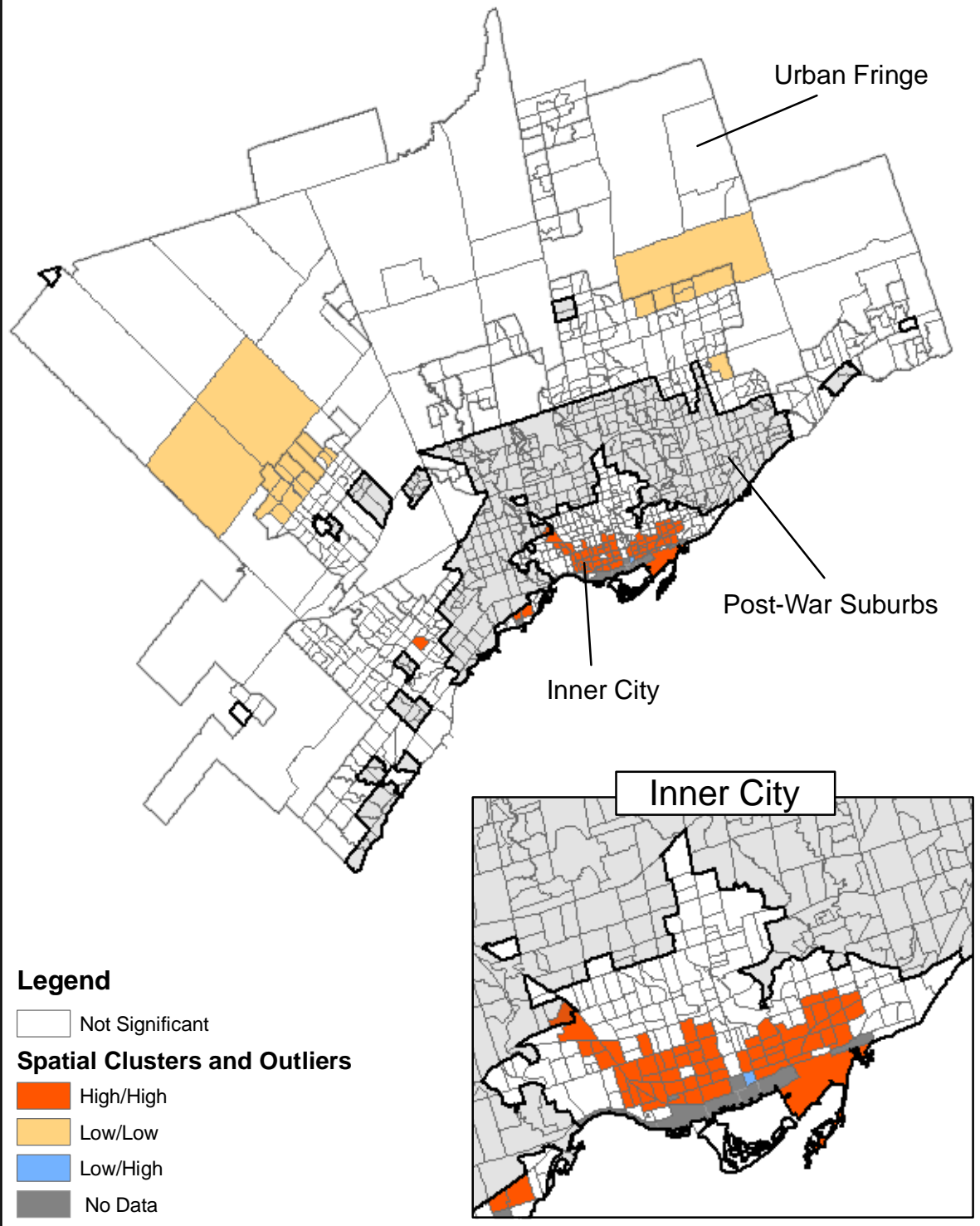
Source: Statistics Canada (2008B, 2007, 1971B)

## Figure 4.59 - 1971 to 2006 Censuses Unemployment Rate: Change in Location Quotient



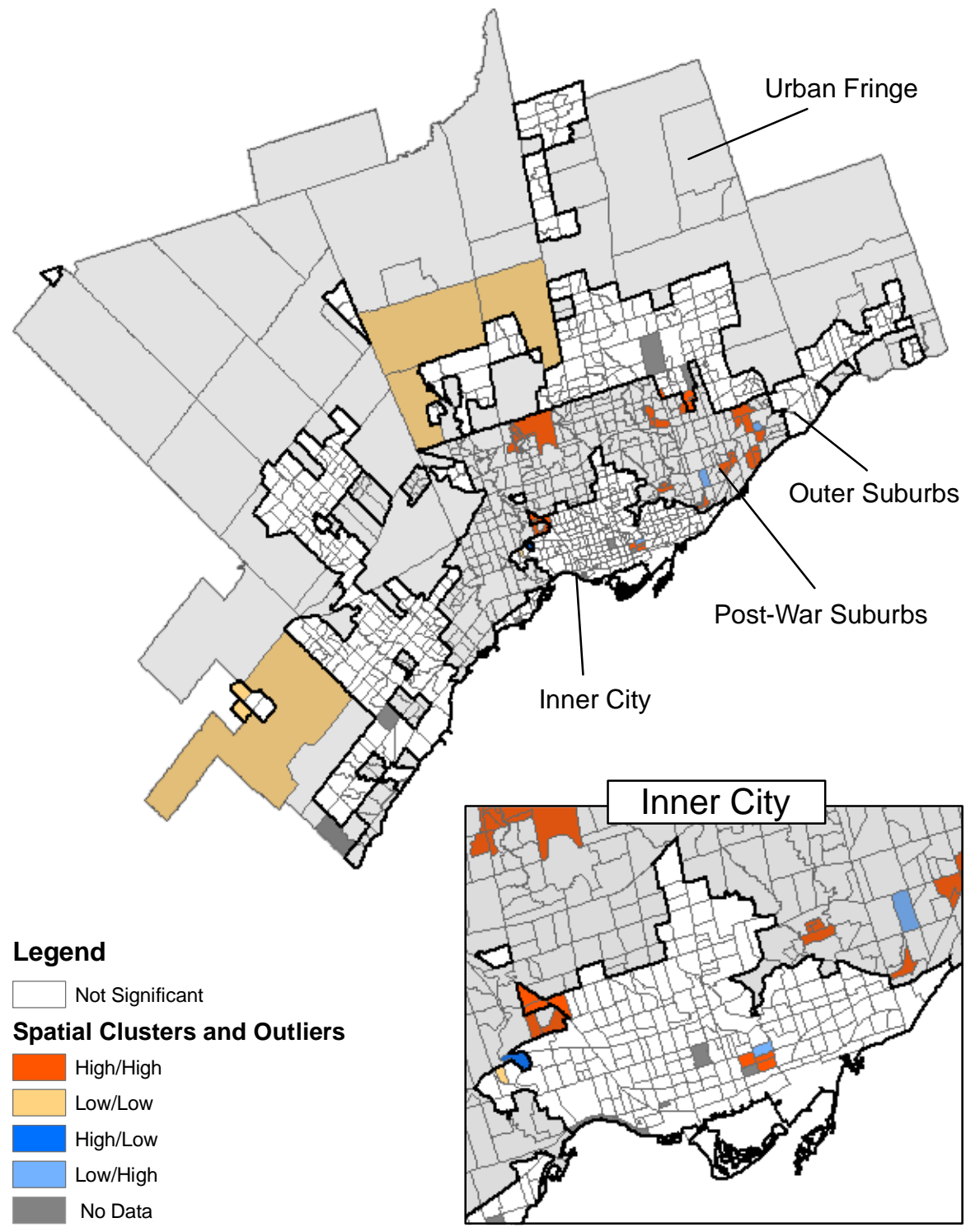
Source: Statistics Canada (2007, 1971B)

Figure 4.60 - 1971 Census  
Unemployment Rate:  
Local Moran's I of Location Quotient



Source: Statistics Canada (2008B, 2007)

Figure 4.61 - 2006 Census  
Unemployment Rate:  
Local Moran's I of Location Quotient



### *Household Composition*

Findings show that both household size and the number of earners per household tend to be larger in the outermost zones of the CMA and smaller in the inner city in both census years. Such a tendency has persisted even as household composition has become more variable. Despite rising numbers of non-traditional households in the suburbs, household composition has become more uneven across urban zones. A new cleavage has appeared between the outermost and innermost zones of the metropolis in both the average household size and the ratio of income earners to households. In the inner city, the decline in household size may be associated with gentrification (Ley, 1996, Melingrana and Skabruskis, 2005). In the post-war suburbs, declining average household sizes and rising unemployment levels could both contribute to the declining ratio of income earners to households. In 2006, many of the census tracts in the outer suburbs and urban fringe have high average household sizes and high numbers of income earners per household. The trend in residential development towards larger housing, built with more bedrooms, may have contributed to the disparity between the newer and older parts of the city, as these larger homes have been mainly constructed in the outer suburbs and urban fringe. Differences in housing stock have likely influenced the location of households with relatively low incomes in the inner city and post-war suburbs, and the location of households with relatively high incomes in the outer suburbs and fringe. In this manner, household composition and the built form intersect to shape the spatial outcome of household income polarization.

#### *Average Household Size - Figures 4.62 to 4.66*

The tendency for smaller households to locate in the inner city and for larger ones move to new suburban homes appears to continue in the post-Fordist period, and to have perhaps become stronger. Tracts with relatively small average household sizes, relative to the CMA average household size, are massed in the inner city in both census years (Figure 4.62 and 4.63). However, in 1971, tract average household sizes in the inner city range from relatively low to relatively high, but by 2006 no tracts with relatively high average household sizes can be seen. The outermost urban zones of the CMA contain most of the tracts with

relatively high numbers of persons per household in both census years, and the contrast between the innermost and outermost zones of the metropolis becomes more distinct over time. In 1971, tracts with high relative average household sizes were scattered across the post-war suburbs and the urban fringe. By 2006, the average household size of most tracts in the post-war suburbs is similar to the overall CMA, while a ring of tracts with high relative household sizes, on average, runs across the outer suburbs and urban fringe. The map of the tract change ratios shows that relative average household sizes declined in more tracts than they increased in the inner city and post-war suburbs (Figure 4.64). Declines are particularly prominent in the inner city, and include many tracts along the western rail line that had high average household sizes in 1971. Maps of statistically significant clusters show that there are extensive clusters of tracts with relatively low average household sizes in the inner city in both years. These have appear to have shifted towards the waterfront, where a number of condominiums, which tend to house small households, have been constructed (Figure 4.65 and 4.66). Moreover, the few high average clusters and outliers that were in the inner city in 1971 are no longer there in 2006. The outer suburbs and the urban fringe contain numerous high average clusters in 2006. Thus, choropleth maps of relative average household sizes among census tracts and maps of statistically significant clusters and outliers show that household sizes tend to be larger in the outermost zones of the CMA and smaller in the inner city in both census years. Furthermore, it appears that this tendency has grown stronger over time.

#### *Ratio of Income Earners to Households- Figures 4.67 to 4.71*

Perhaps more so than for any other variable, choropleth maps for 1971 show little variability among tracts in the ratio of the number of earners per household, relative to the CMA ratio. Figure 4.67 shows that in 1971, tracts with high ratios of income earners to households tend to be located in the south and west of the inner city, and a few tracts with low ratios are scattered across the inner city and post-war suburbs, but most tracts in each zone have ratios that are within plus or minus 25% of the CMA ratio of income earners to households. However, Figure 4.68 shows that in 2006 there is a clear split between the inner city and the post-war suburbs on the one hand, and the outer suburbs and the urban fringe on the other. By 2006, tracts with high location quotients are primarily located in the outer

suburbs and the fringe. These high quotient tracts form a ring around the post-war suburbs and the inner city, where tract ratios tend to be moderate to low in relation to the CMA ratio. Figure 4.69 shows that the ratio of income earners to households was stable in most tracts in the inner city and the post-war suburbs. The location quotients for income earners to households increased in some tracts, particularly on the outer borders of the post-war suburbs. Location quotients declined in a number of tracts to the west of the inner city, and in tracts that are scattered across the post-war suburbs. Maps of statistically significant clusters show that in 1971 there are a number of high quotient clusters in the inner city, but by 2006 high quotient clusters can be found exclusively throughout the outer suburbs and the urban fringe (Figure 4.70 and 4.71). Clusters of tracts with low location quotients of earners to households can be found in the inner city in both years, and two low quotient clusters appear in the post-war suburbs in 2006.

#### *Concentrations of Recent and Established Immigrants - Figures 4.72 to 4.81*

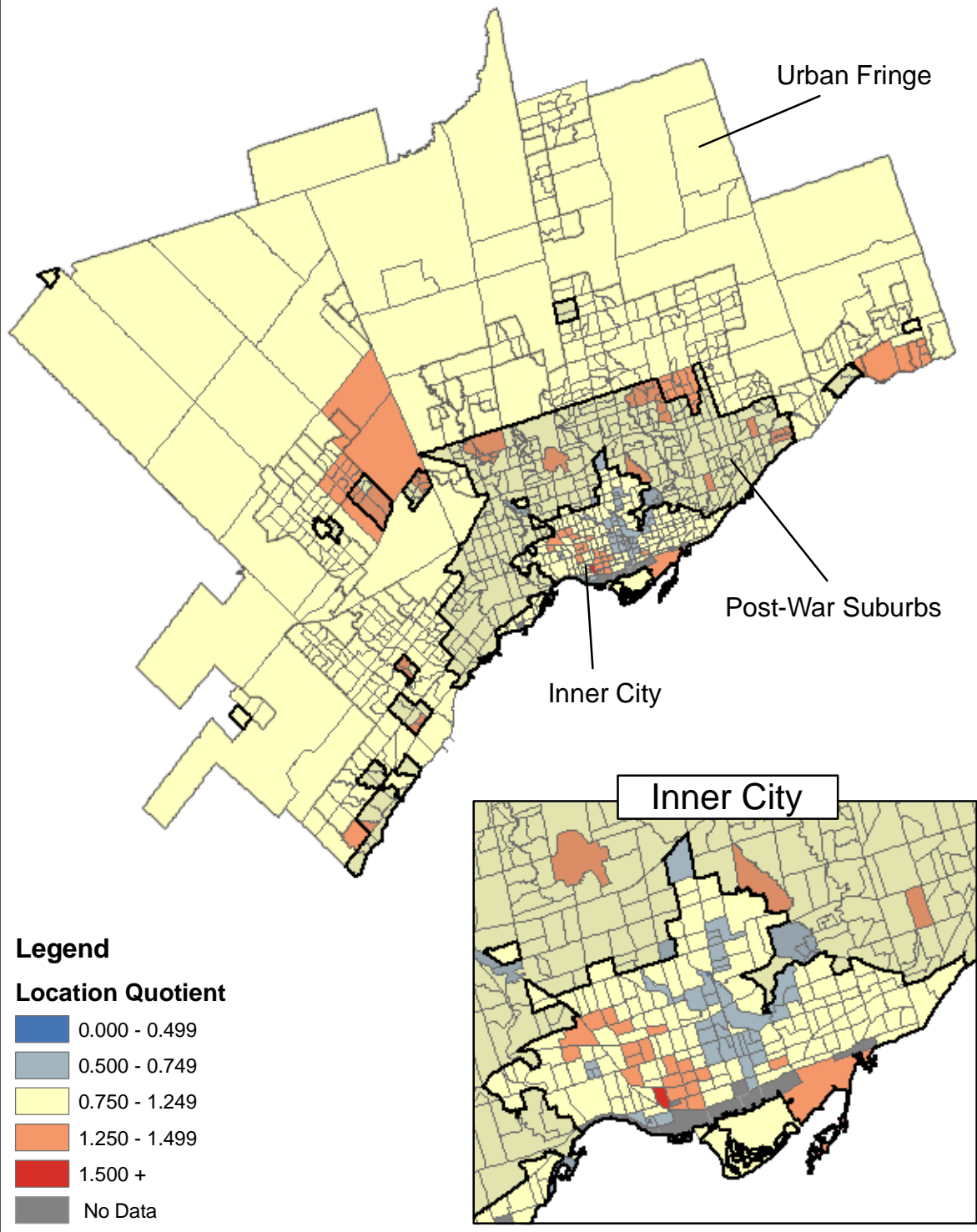
The residential concentration of immigrants among census tracts shows a strong reversal of inner-city-suburban differentials. In 1971, the inner city was the primary location of high concentration tracts for recent immigrants, those who arrived up to 6 years before the census, and for more established immigrants, who arrived 6 to 25 years before the census (Figures 4.72 and 4.77). Those who had been in Canada for longer were also concentrated in the west of the post-war suburbs, which is perhaps indicative of the movement to particular post-war suburbs by long-time residents as their fortunes increased (Troper, 2003, Murdie, 1969). Concentrations of immigrants in the western sector in 1971 have largely dissipated by 2006. In 2006, high concentrations of immigrants who had been in Canada for 6 to 25 years form a halo around the inner city in the north of the post-war and outer suburbs and the fringe (Figure 4.78). Numerous tracts with high concentrations of recently arrived immigrants are located in the post-war suburbs and the outer suburbs in 2006 (Figure 4.73). Maps of the change in concentration among tracts over time show that most tracts in the inner city saw declines in the concentration of both recent and more established immigrants (Figure 4.74 and Figure 4.79). The declines among inner city tracts for recent immigrants is an indication that this zone is no longer the primary entry point in the CMA for new Canadians. In contrast,



tracts across the post-war suburbs saw increases in the concentration of recent immigrants. Most tracts where there was an increase in the concentration of established immigrants are in the east of the post-war suburbs. Maps of statistically significant clusters confirm that concentrations of recent and established immigrants have decentralized. In 1971, extensive clusters of tracts with high concentrations of recent and established immigrants were located in the inner city and in the west of the post-war suburbs (Figures 4.75 and 4.80). By 2006, high concentrations of recent and established immigrants are no longer clustered in the inner city, and clusters of tracts with low concentrations of more established immigrants appear in this zone (Figure 4.76 and 4.81). In 2006, High concentration clusters are located across the suburban zones for more established immigrants, with extensive clusters in the municipalities of Markham and Richmond Hill, and are peppered across the post-war suburbs for recent immigrants.

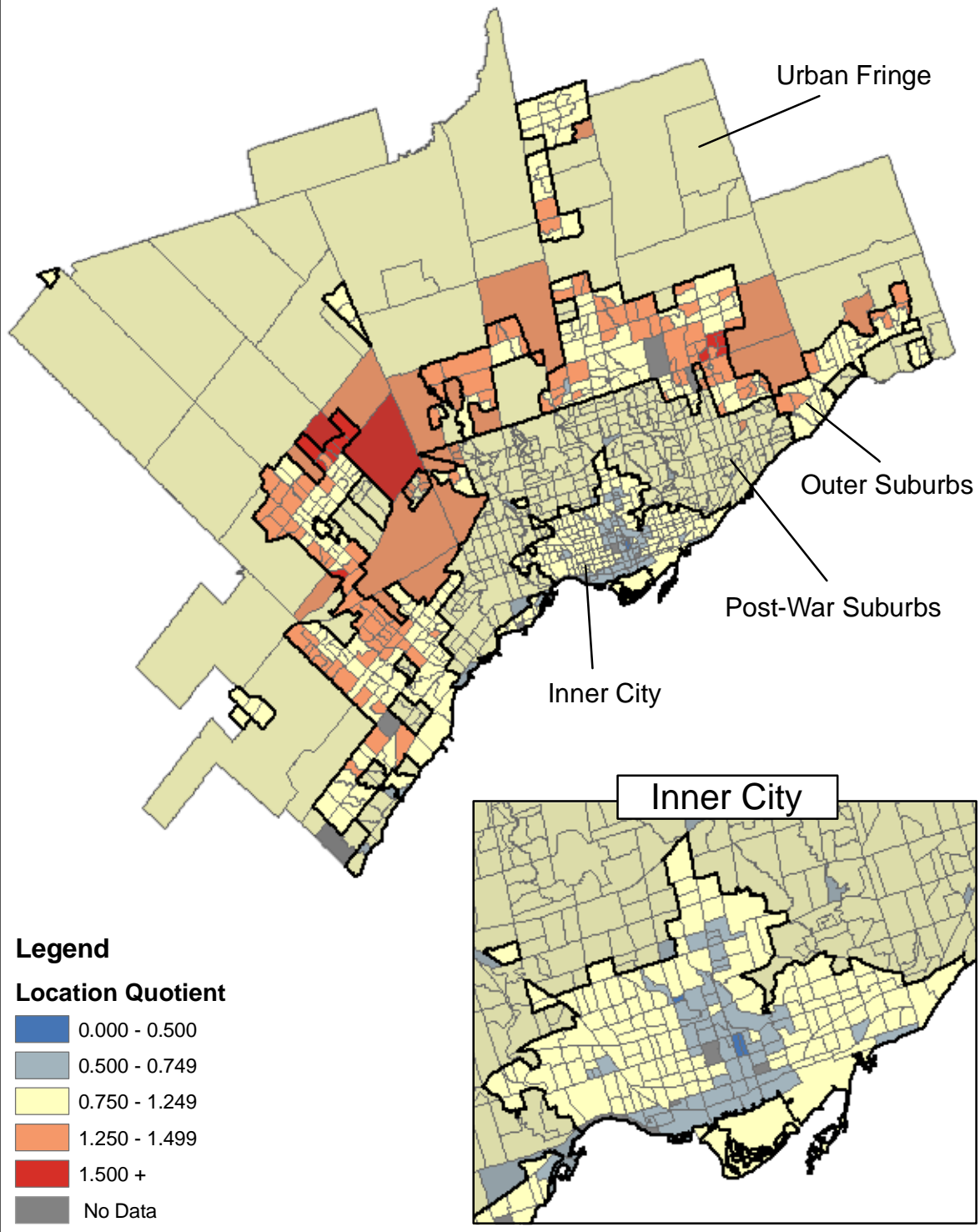
Source: Statistics Canada (2007, 1971A)

Figure 4.62 - 1971 Census  
Average Household Size:  
Location Quotient



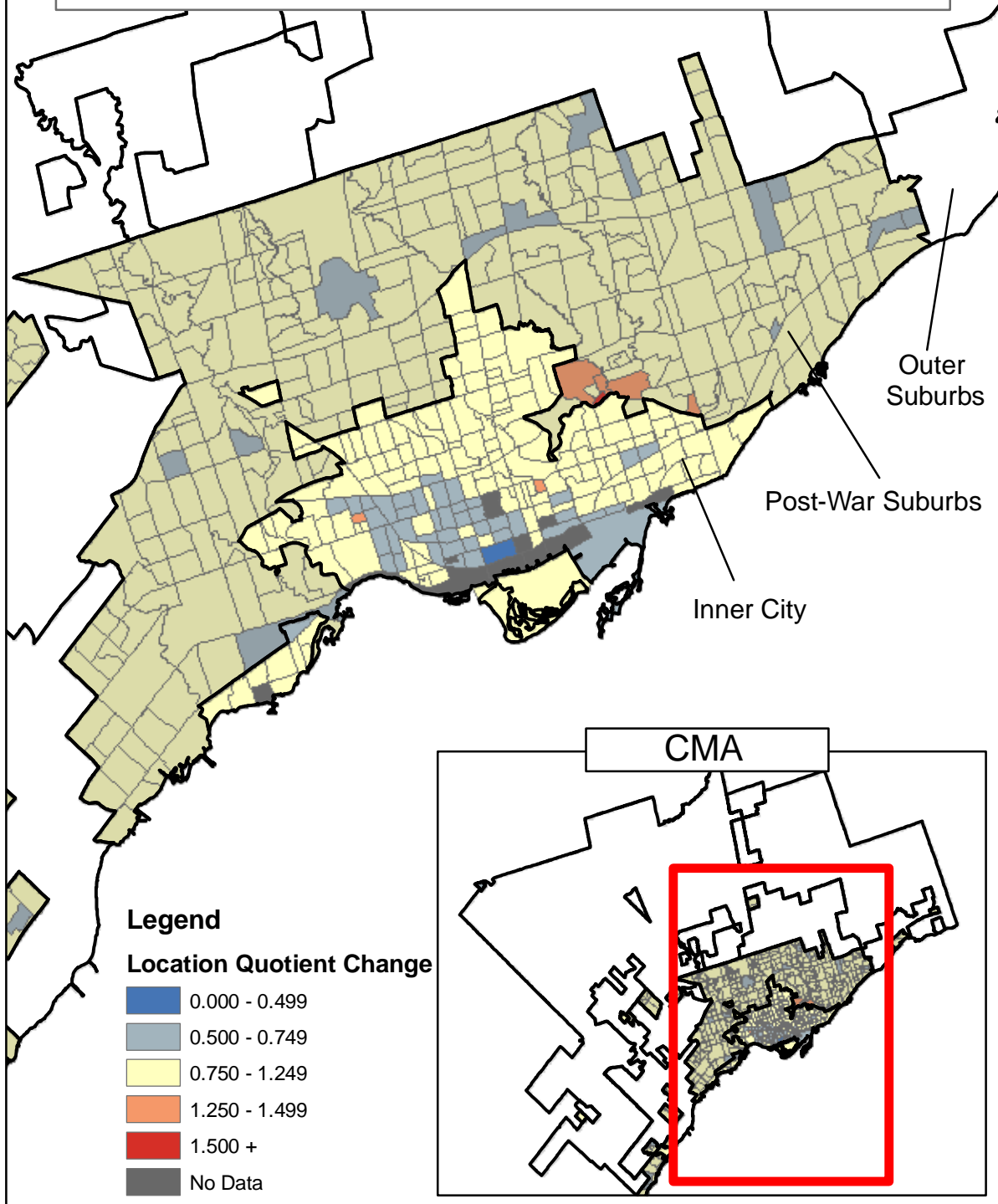
Source: Statistics Canada (2008B, 2007)

Figure 4.63 - 2006 Census  
Average Household Size:  
Location Quotient



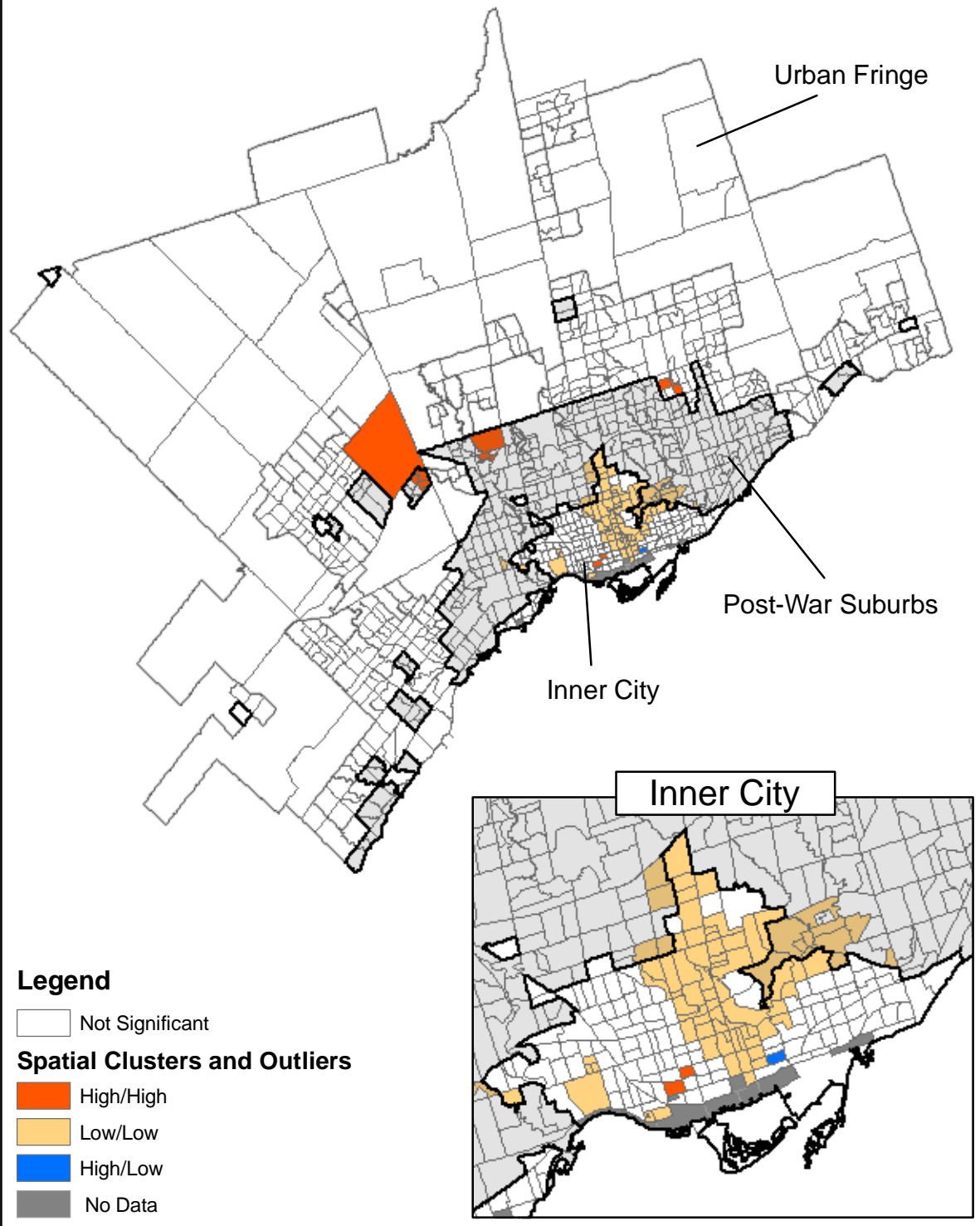
Source: Statistics Canada (2008B, 2007, 1971A)

## Figure 4.64 - 1971 to 2006 Censuses Average Household Size: Change in Location Quotient



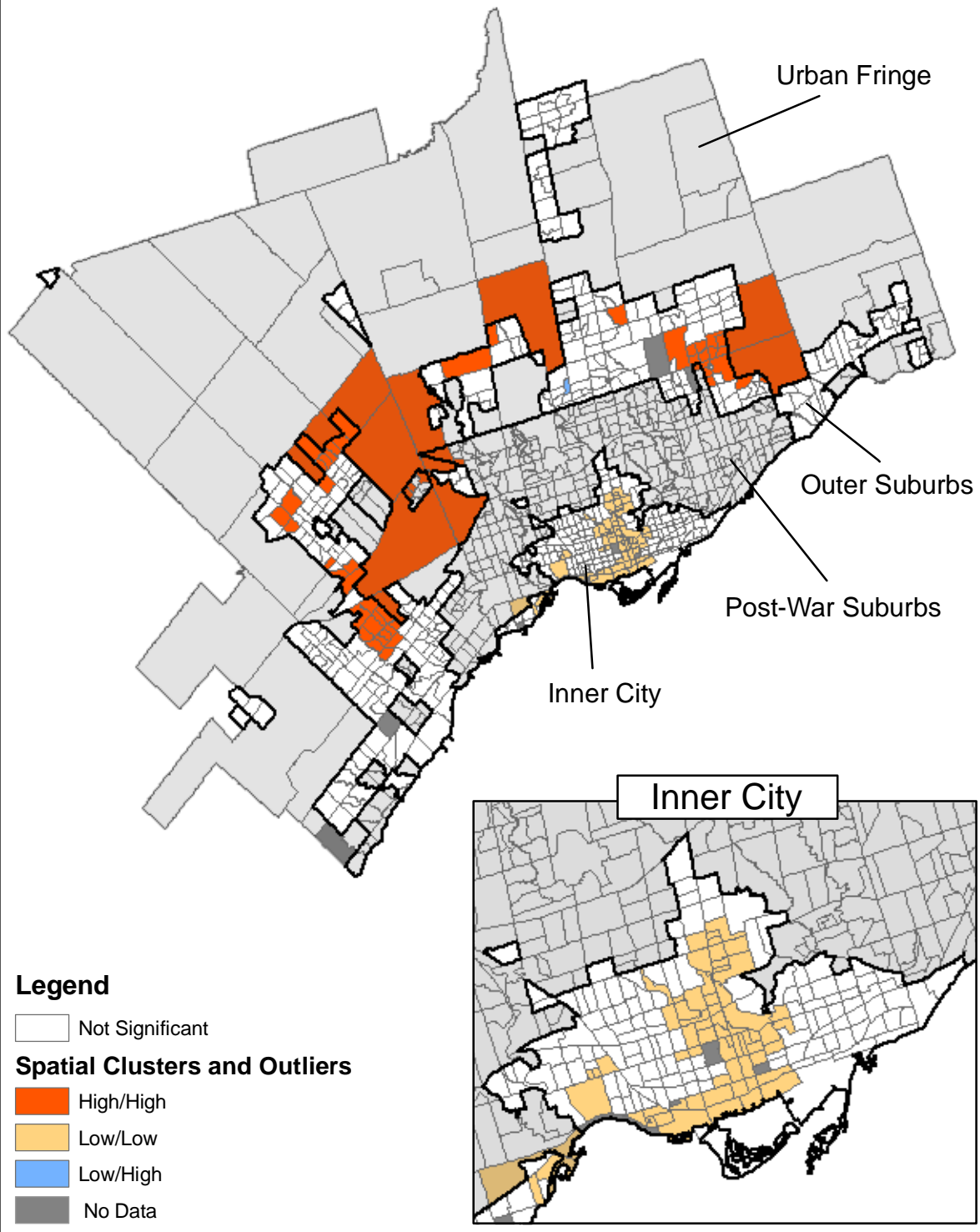
Source: Statistics Canada (2007, 1971A)

Figure 4.65 - 1971 Census  
Average Household Size:  
Local Moran's I of Location Quotient



Source: Statistics Canada (2008B, 2007)

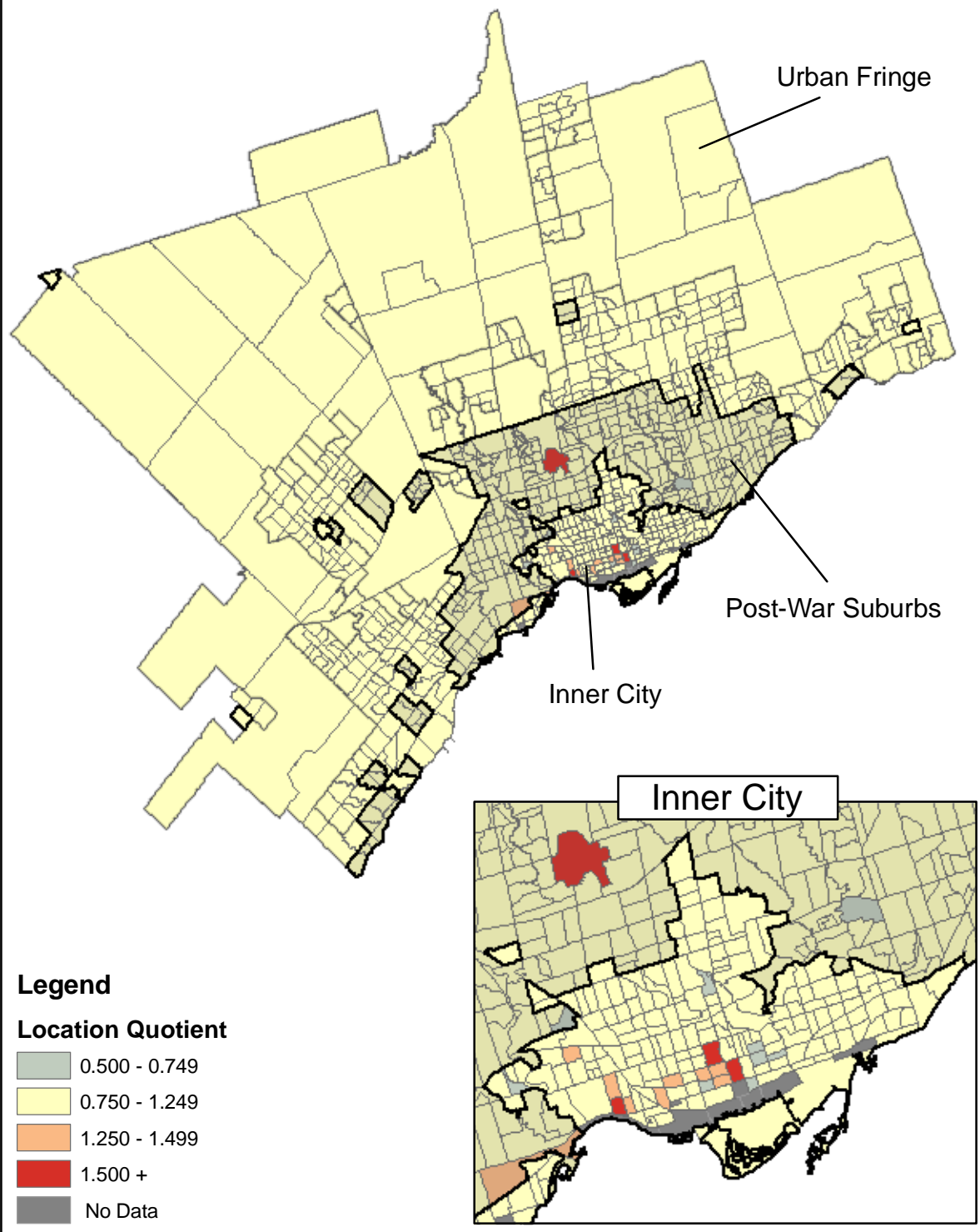
Figure 4.66 - 2006 Census  
Average Household Size :  
Local Moran's I of Location Quotient





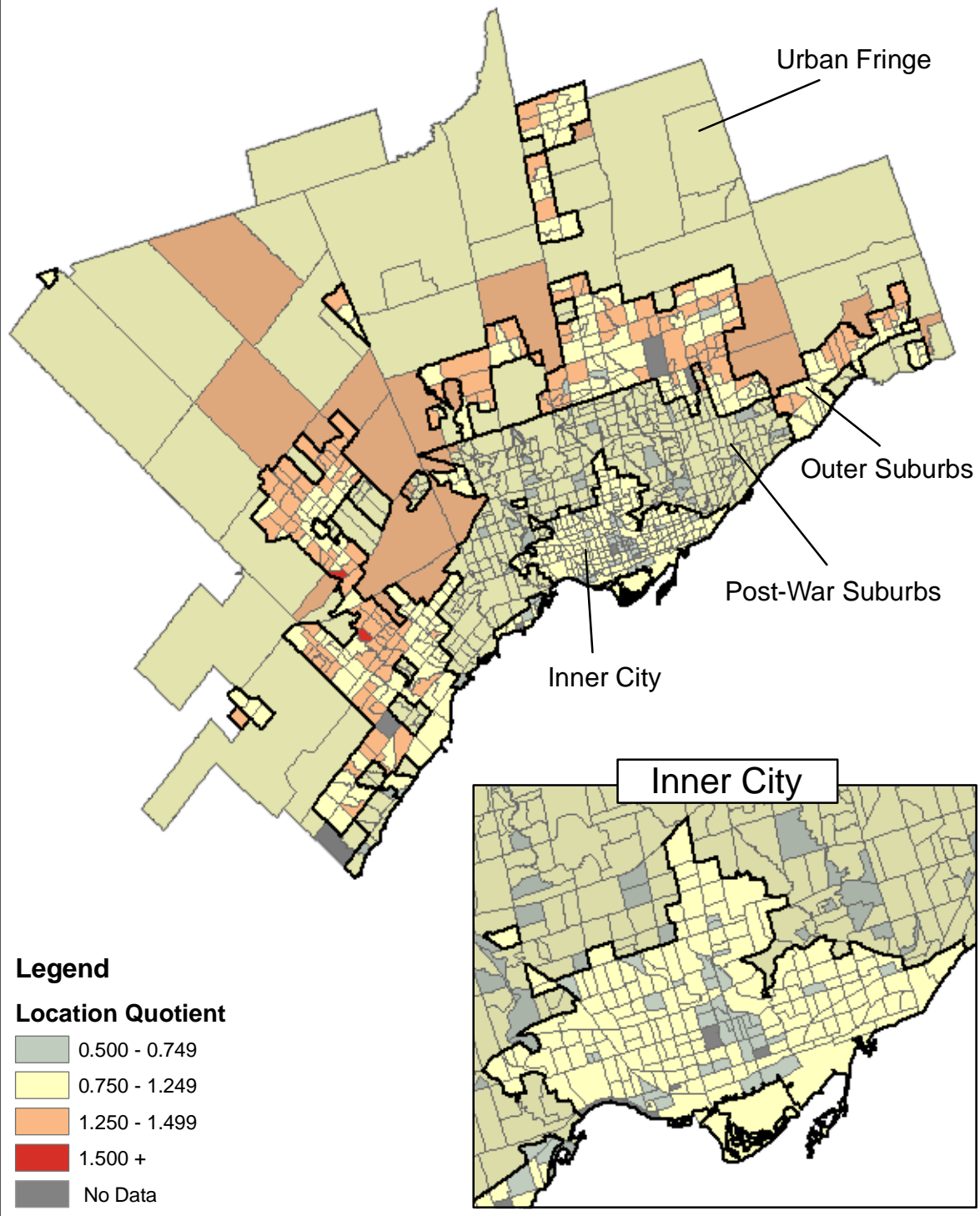
Source: Statistics Canada (2007, 1971A, 1971B)

Figure 4.67 - 1971 Census  
Earners per Household:  
Location Quotient



Source: Statistics Canada (2008B, 2007)

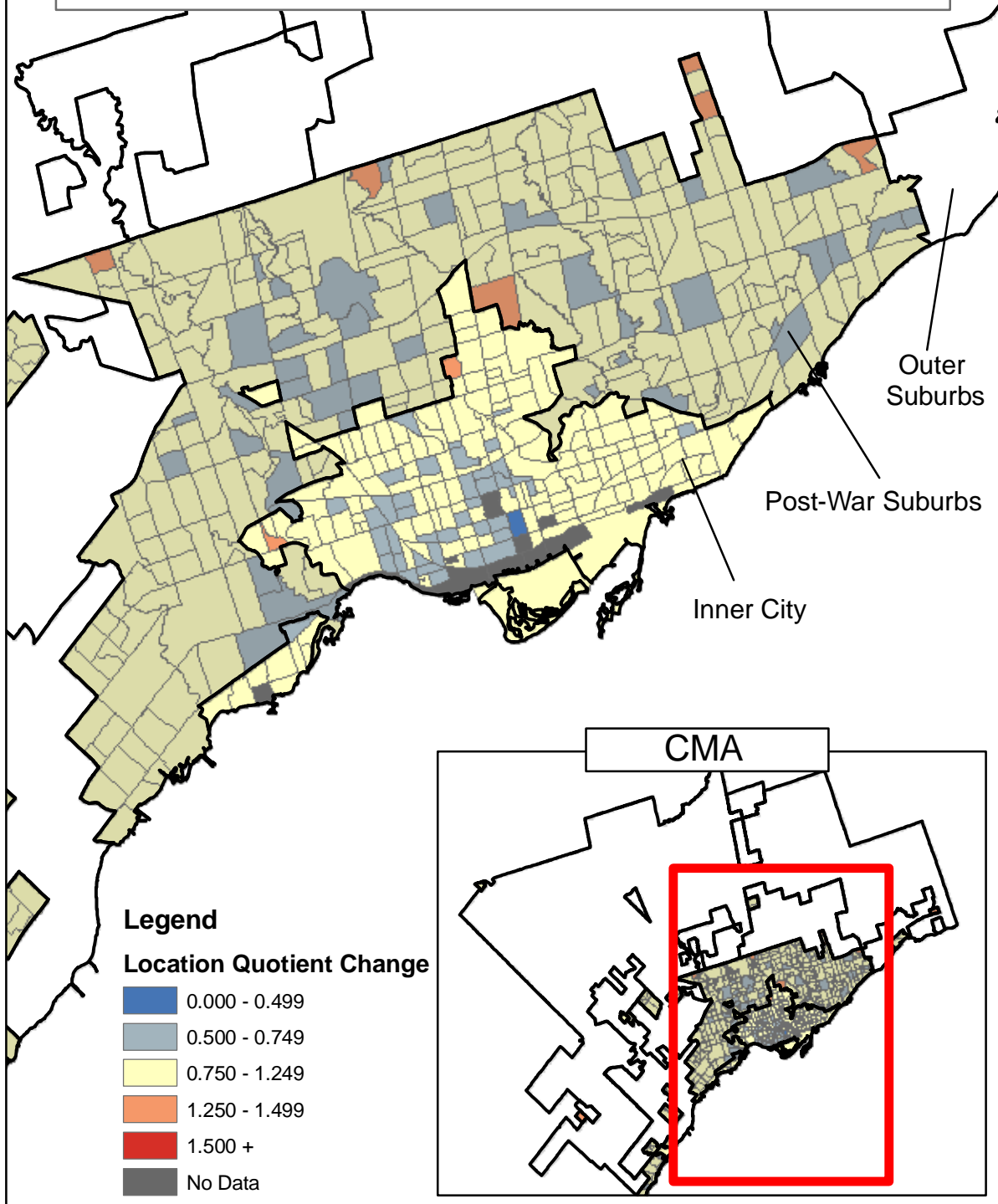
Figure 4.68 - 2006 Census  
Earners per Household:  
Location Quotient





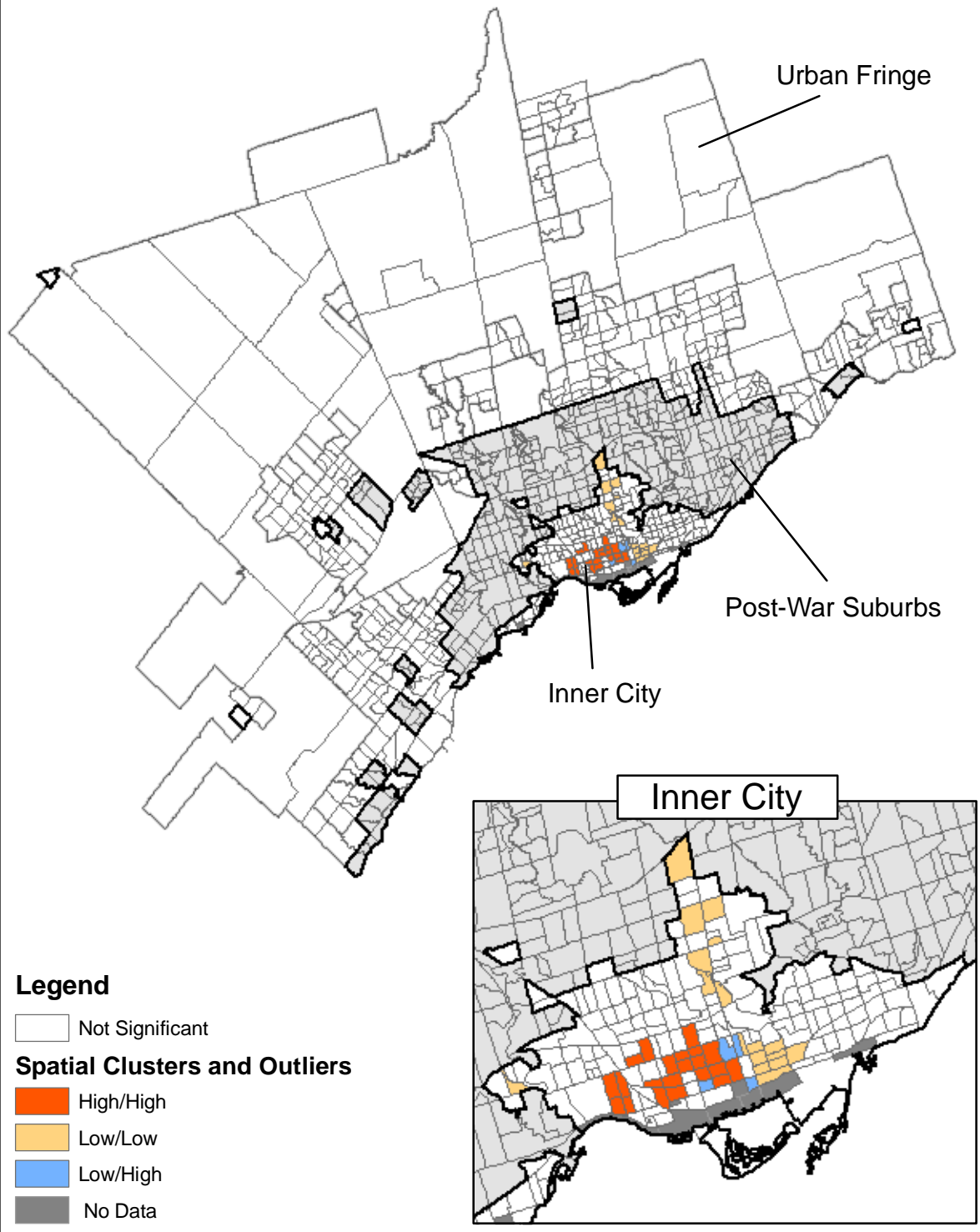
Source: Statistics Canada (2008B, 2007, 1971A, 1971B)

## Figure 4.69 - 1971 to 2006 Censuses Earners per Household: Change in Location Quotient



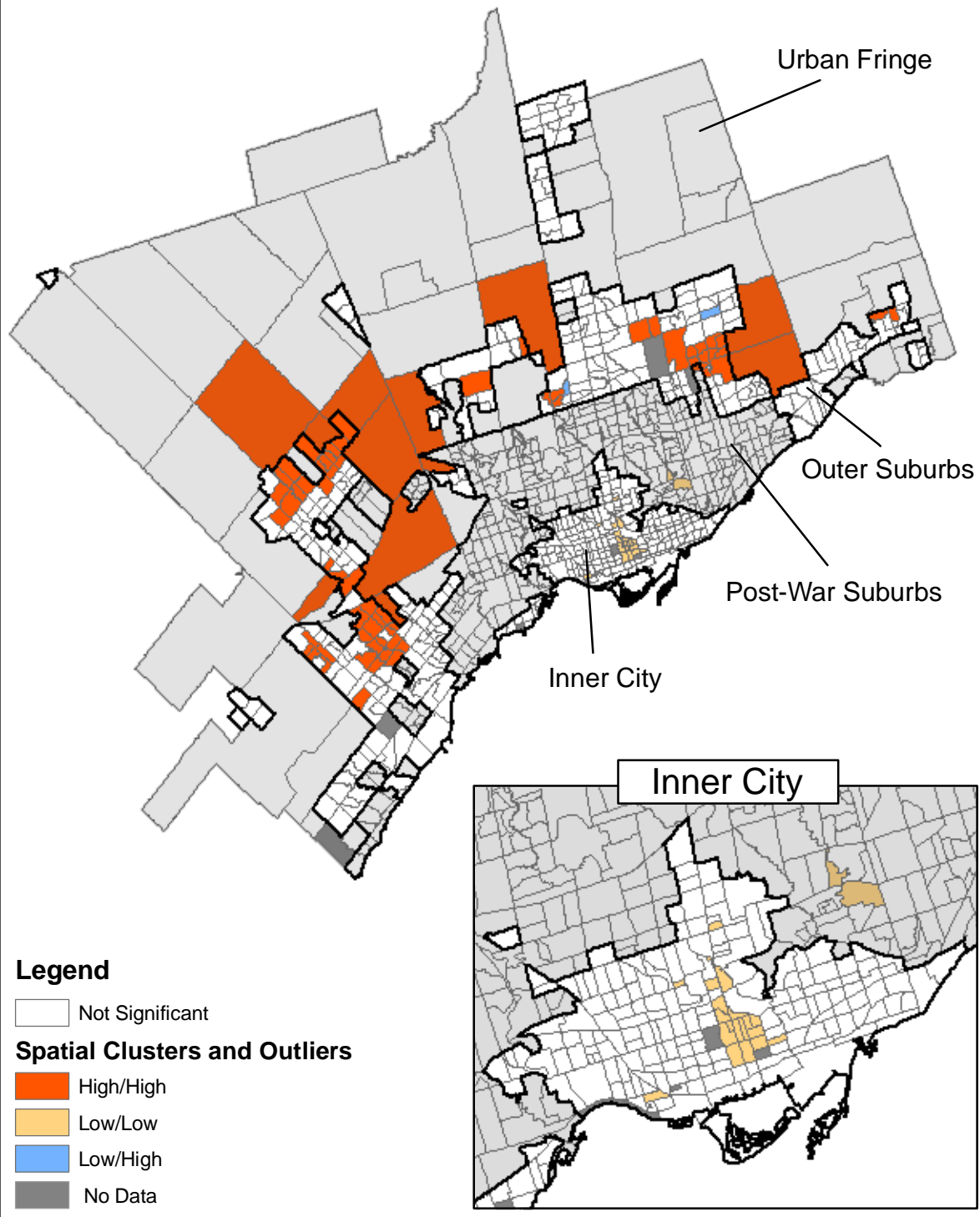
Source: Statistics Canada (2007, 1971A, 1971B)

Figure 4.70 - 1971 Census  
Earners per Household:  
Local Moran's I of Location Quotient



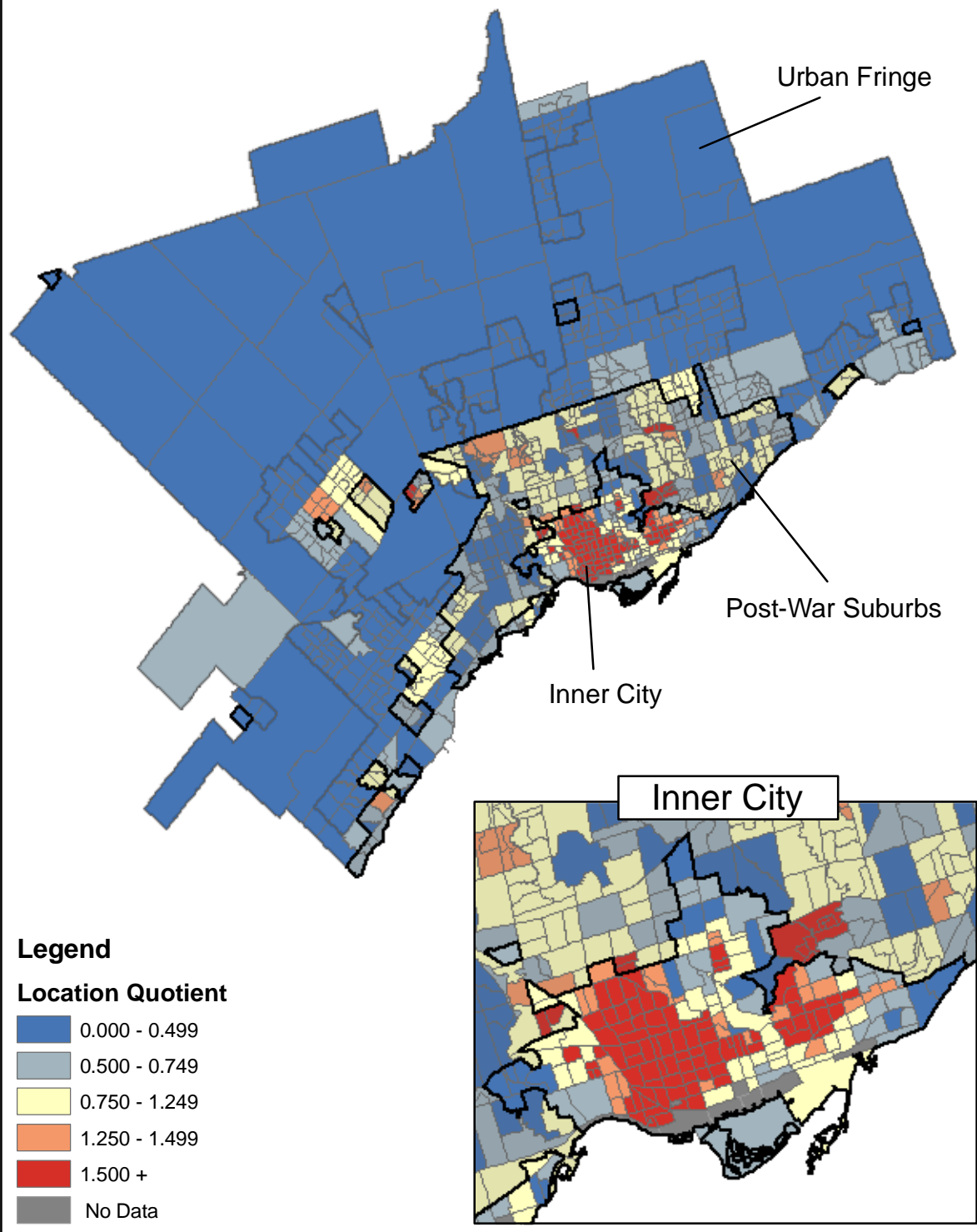
Source: Statistics Canada (2008B, 2007)

Figure 4.71 - 2006 Census  
Earners per Household:  
Local Moran's I of Location Quotient



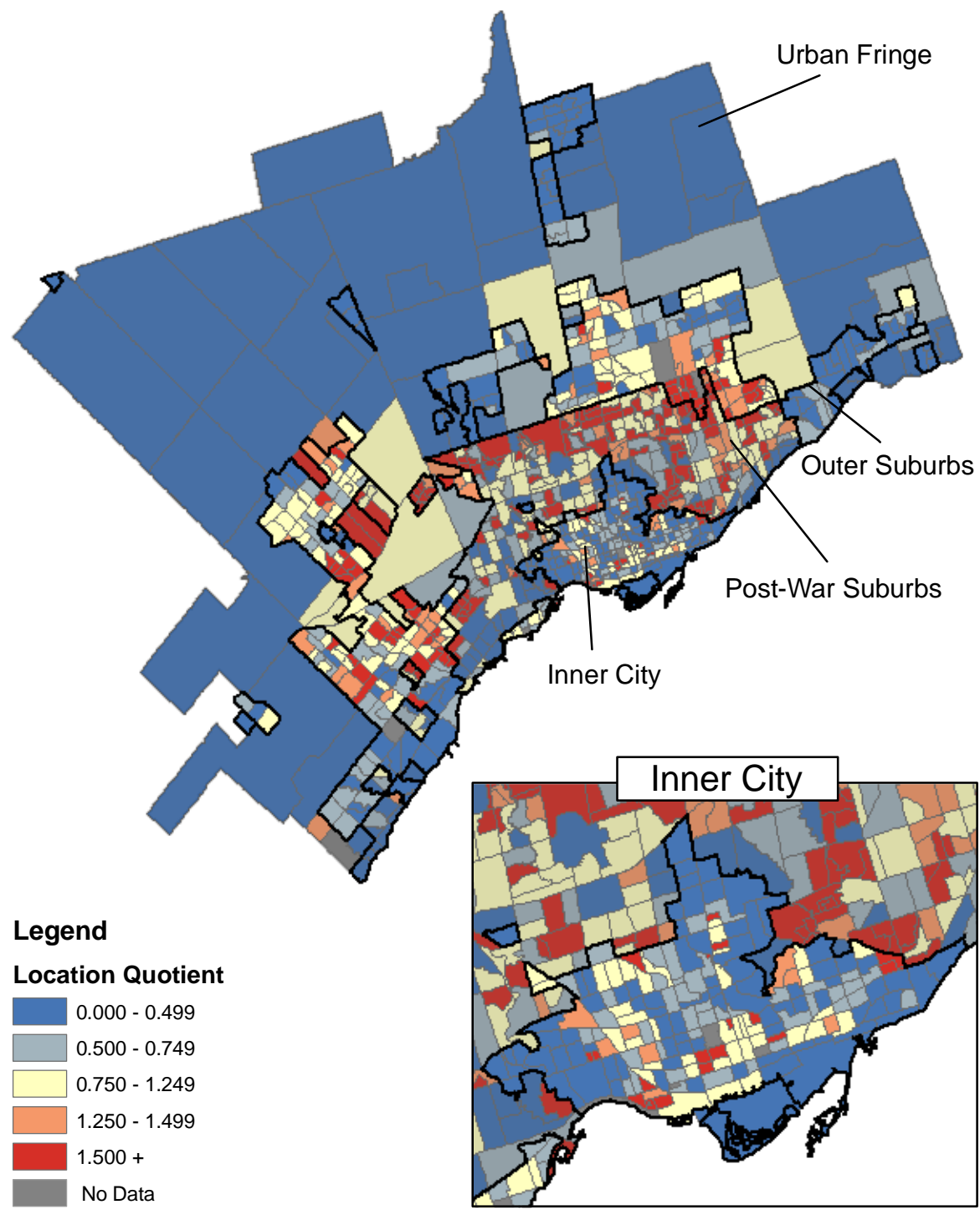
Source: Statistics Canada (2007, 1971B)

Figure 4.72 - 1971 Census  
Immigrants who Arrived Up to 6 Years Before the Census:  
Location Quotient



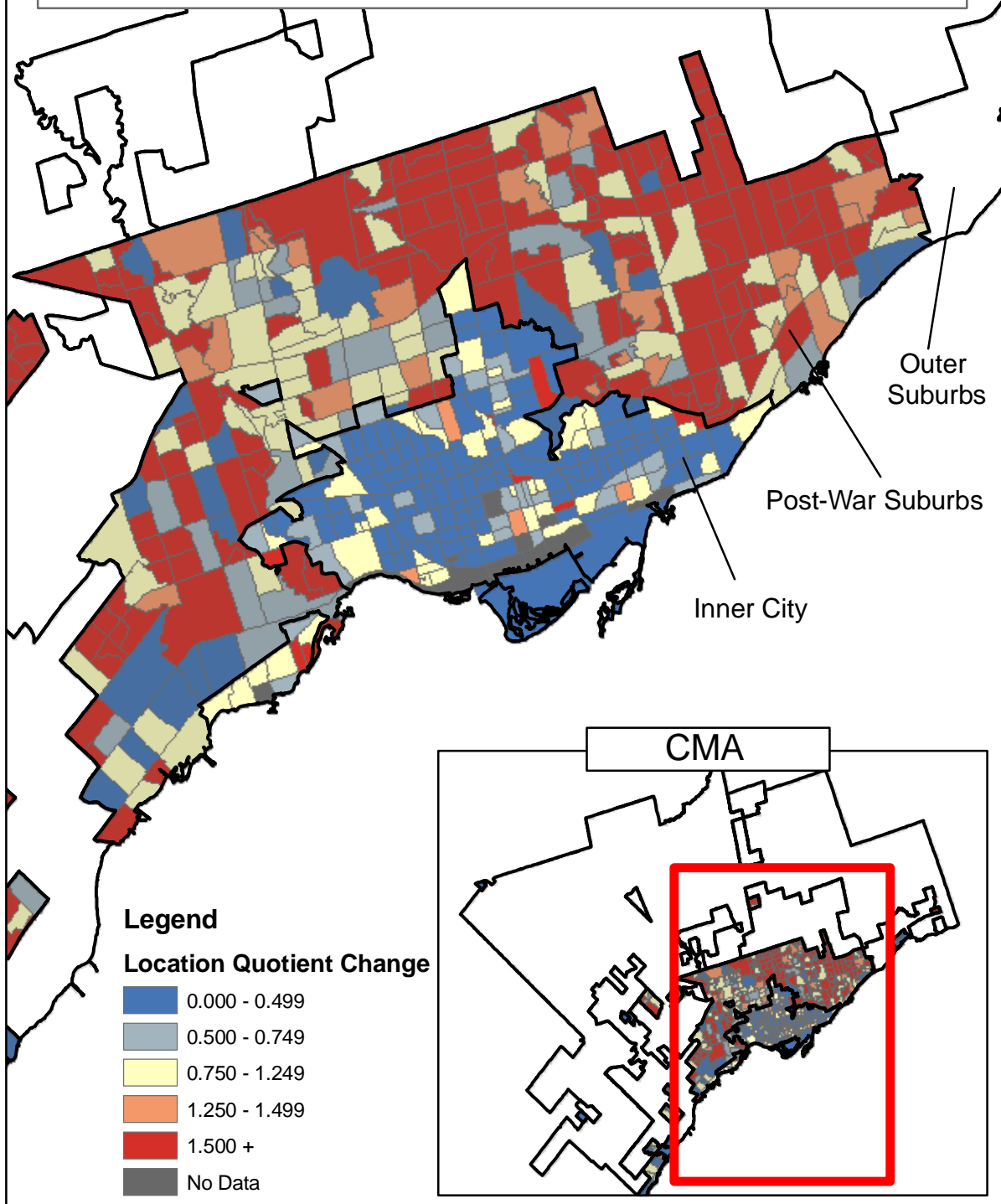
Source: Statistics Canada (2008B, 2007)

Figure 4.73 - 2006 Census  
Immigrants who Arrived Up To 6 Years Before the Census:  
Location Quotient



Source: Statistics Canada (2008B, 2007, 1971B)

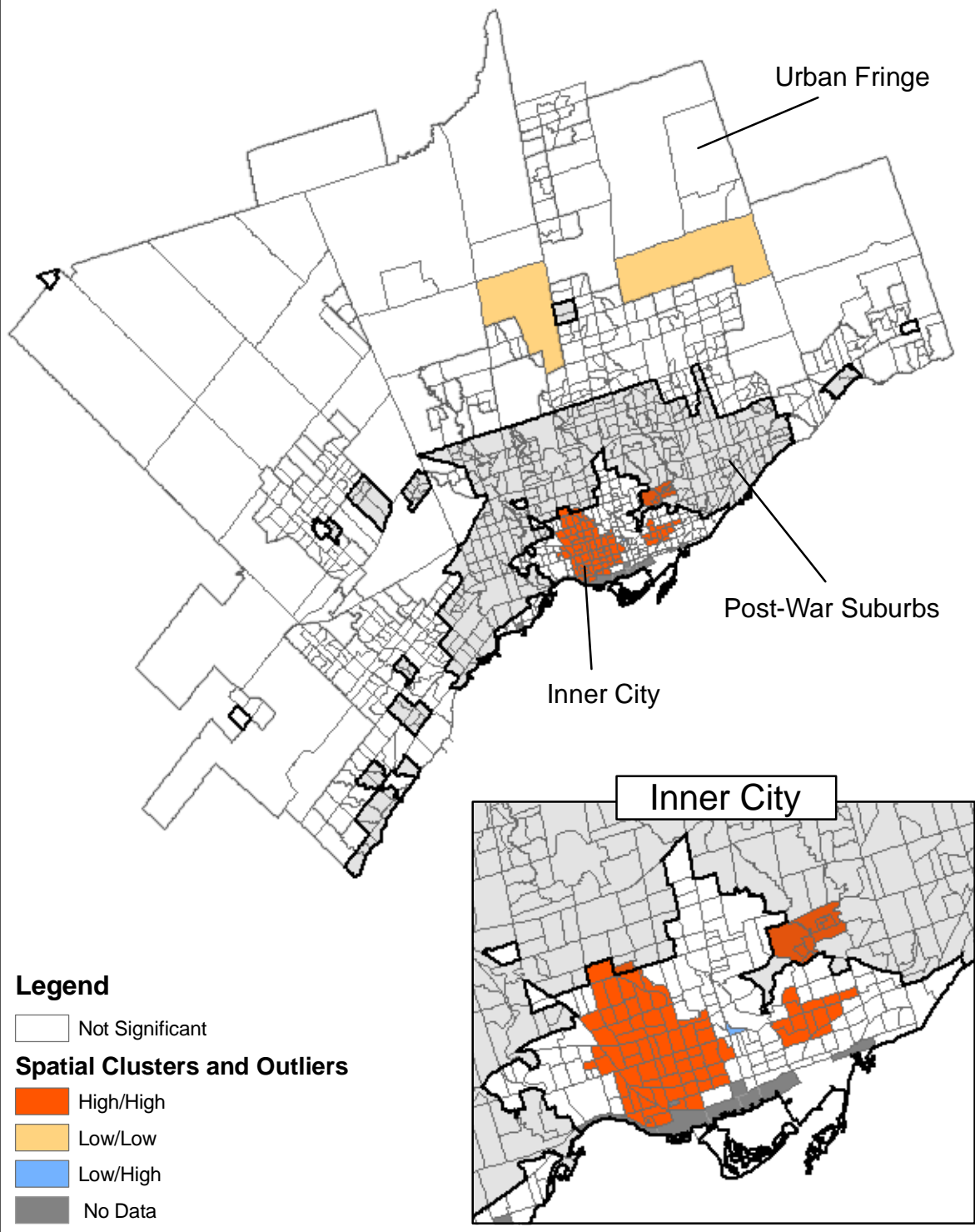
Figure 4.74 - 1971 to 2006 Censuses  
Immigrants Who Arrived Up to 6 Years Before the Census:  
Change in Location Quotient





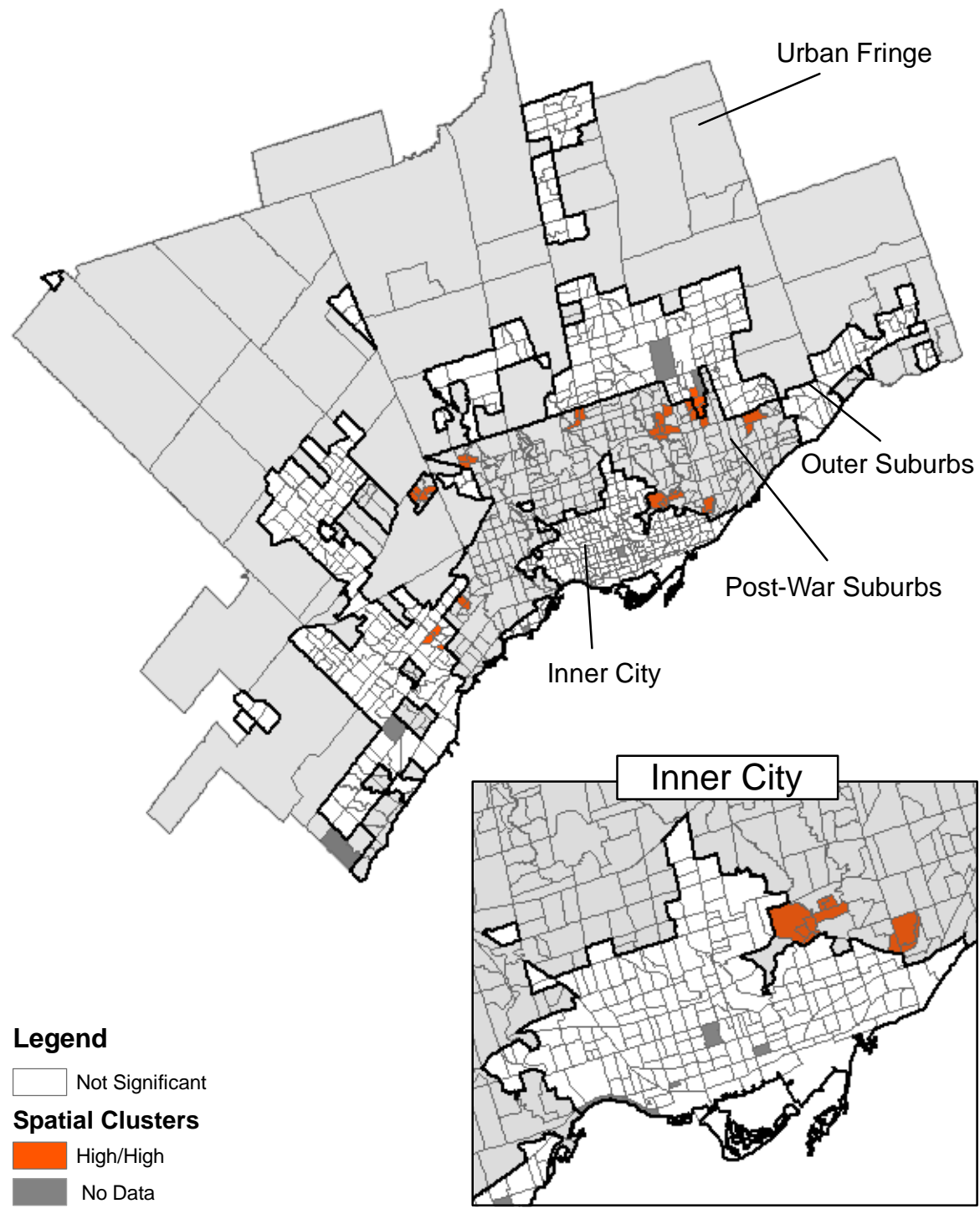
Source: Statistics Canada (2007, 1971B)

Figure 4.75 - 1971 Census  
Immigrants who Arrived Up to 6 Years Before the Census:  
Local Moran's I of Location Quotient



Source: Statistics Canada (2008B, 2007)

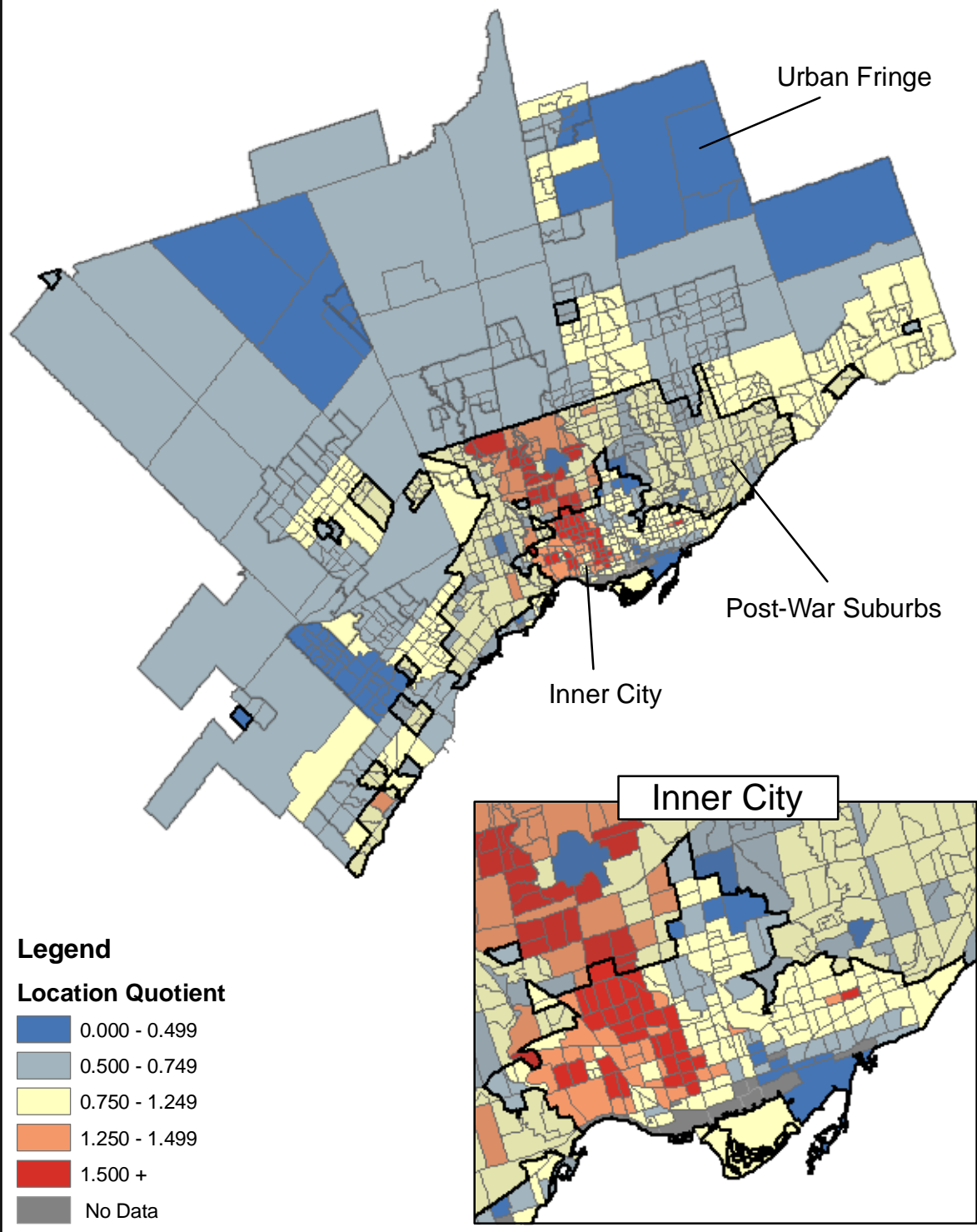
Figure 4.76 - 2006 Census  
Immigrants Who Arrived Up to 6 Years Before the Census:  
Local Moran's I of Location Quotient





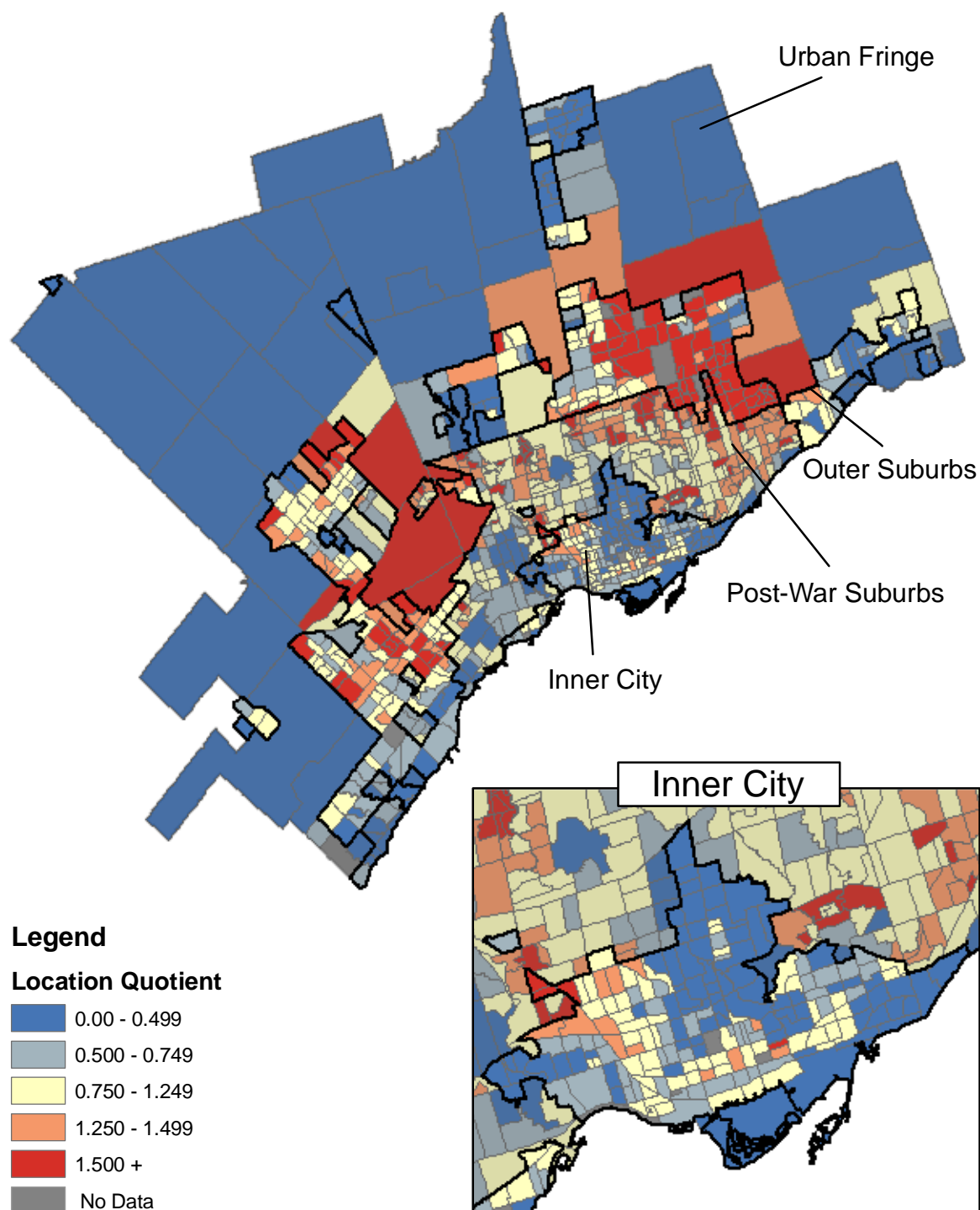
Source: Statistics Canada (2007, 1971B)

Figure 4.77 - 1971 Census  
Immigrants who Arrived 6 to 25 Years Before the Census:  
Location Quotient



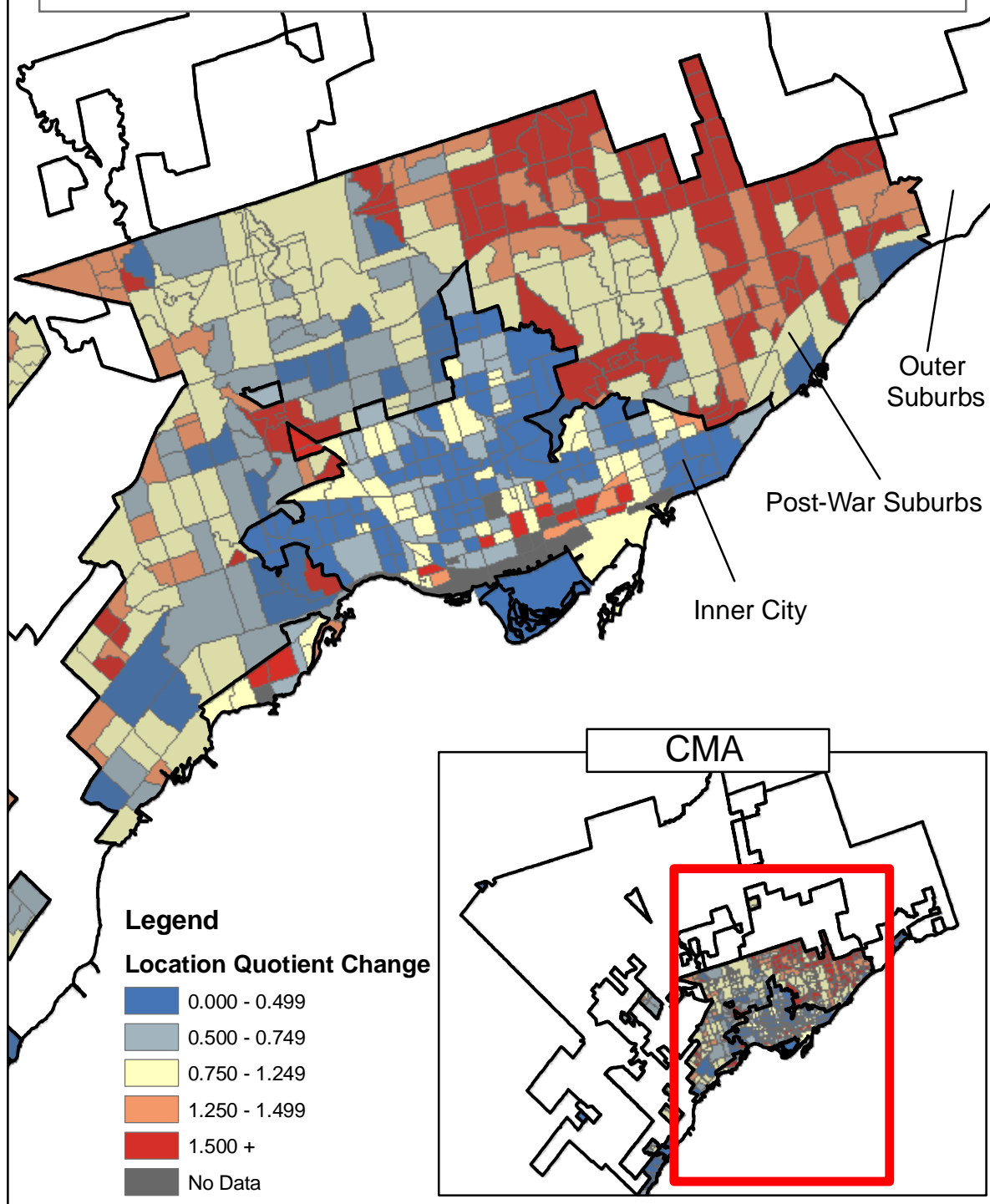
Source: Statistics Canada (2008B, 2007)

Figure 4.78 - 2006 Census  
Immigrants who Arrived 6 To 25 Years Before the Census:  
Location Quotient



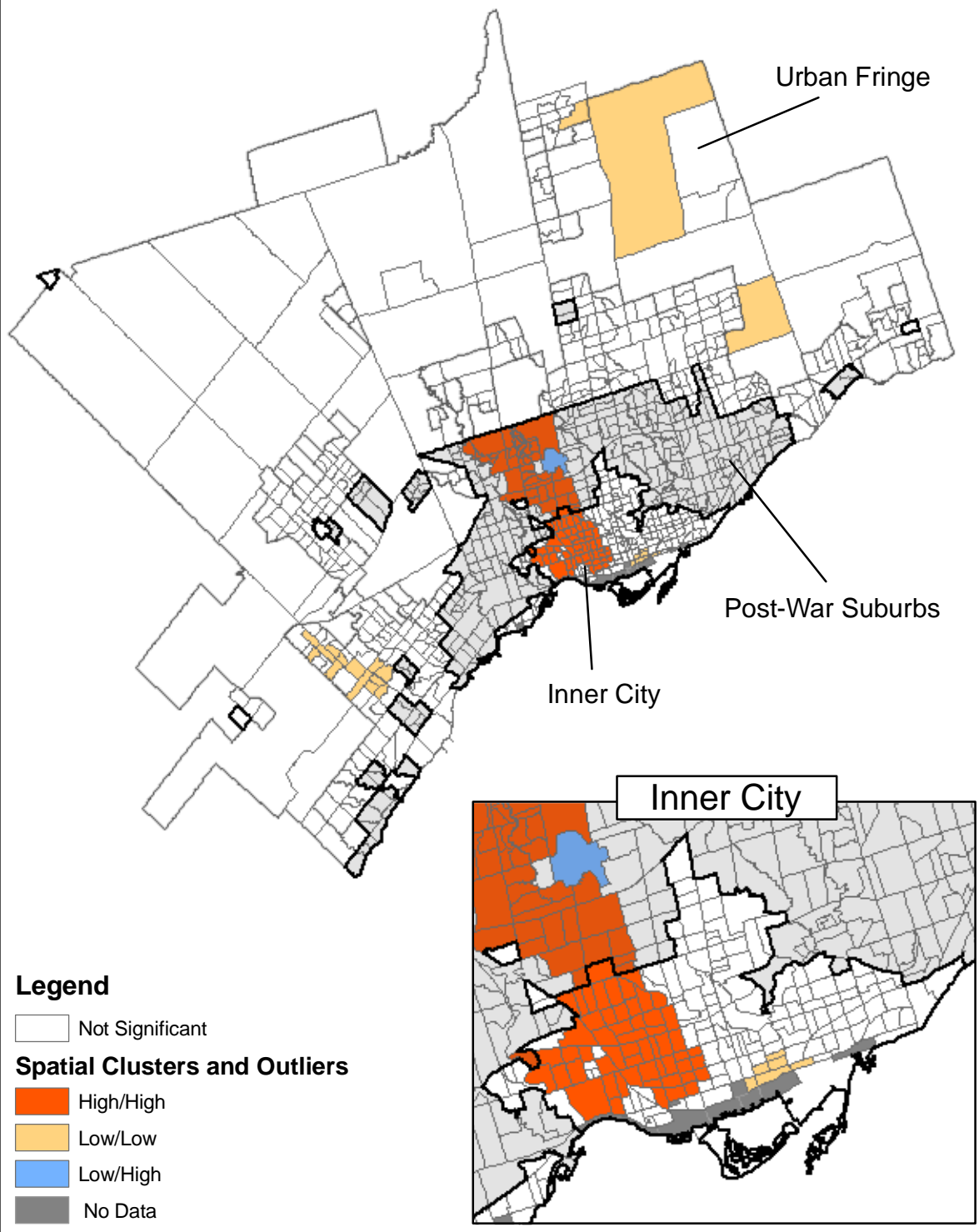
Source: Statistics Canada (2008B, 2007, 1971B)

# Figure 4.79 - 1971 and 2006 Censuses Immigrants who Arrived 6 to 25 Years Before the Census: Change in Location Quotient



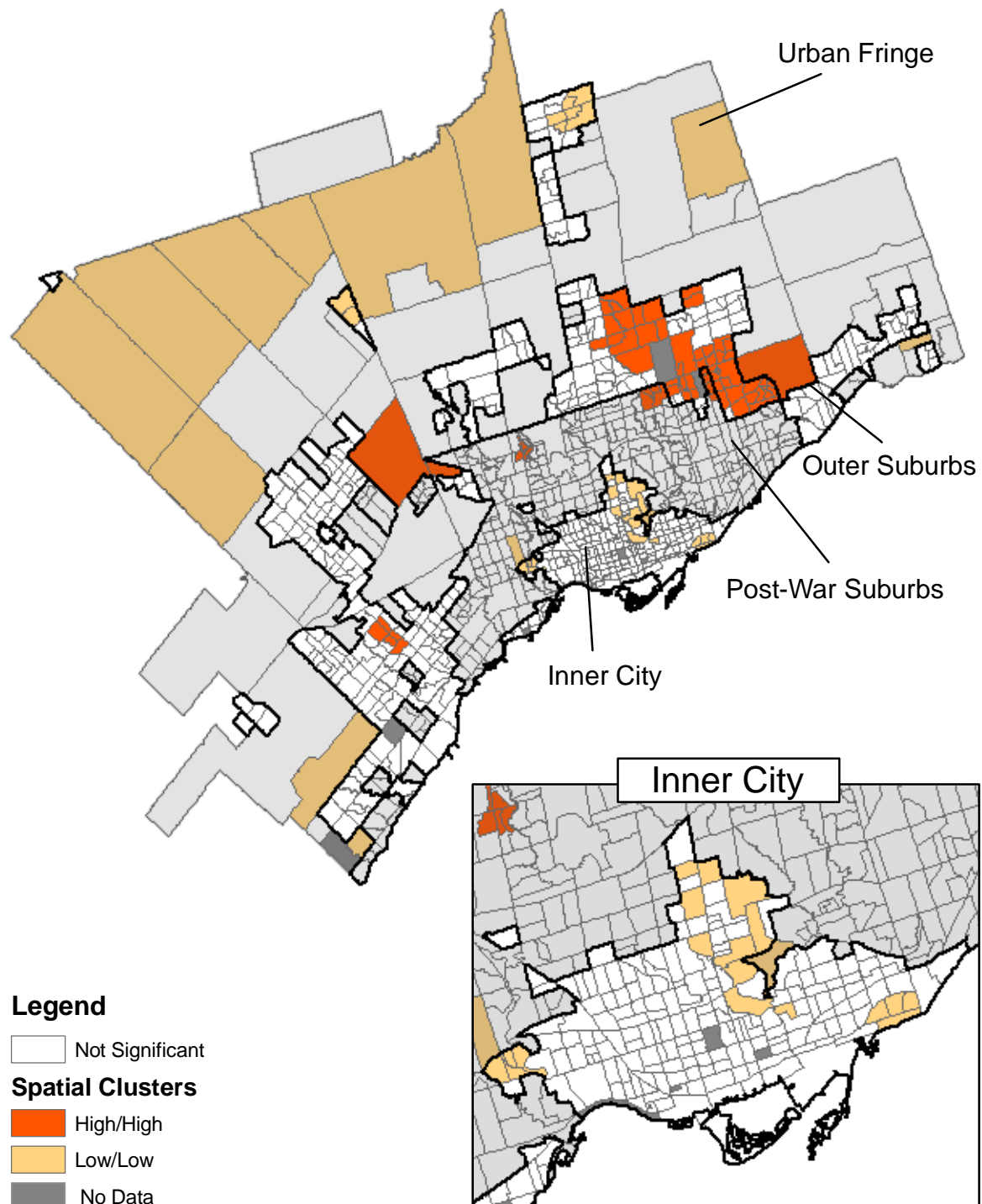
Source: Statistics Canada (2007, 1971B)

Figure 4.80 - 1971 Census  
Immigrants who Arrived 6 to 25 Years Before the Census:  
Local Moran's I of Location Quotient



Source: Statistics Canada (2008B, 2007)

Figure 4.81 - 2006 Census  
Immigrants Who Arrived 6 To 25 Years Before the Census:  
Local Moran's I of Location Quotient



#### 4.4 Concentrations of Social Status Indicators Among Urban Zones

In this section, the relative level of each variable at the scale of the urban zone is examined. Other spatial patterns, such as sectors, are also apparent in the maps. Nonetheless, the findings in this section address on changes that have occurred between urban zones that can be identified by their period of development. Table 4.10 shows statistics which will be discussed in this section. Much of the findings from mapping location quotients at the scale of the census tract are reinforced by the changes uncovered from calculating statistics at the scale of the urban zones. In 2006, the outer suburbs have somewhat low of per capita income, despite generally high household incomes. Conversely, there are high per capita incomes in the inner city, and these have risen greatly over the study period, while household incomes have not risen as much and remain somewhat low in 2006. Between these urban zones are the post-war suburbs, which is the only urban zone where income measures decline relative to the rest of the CMA, and it is the poorest area of the city in 2006. Concentrations of managers, professionals, and university educated residents have come to characterize the inner city by 2006, although managers are also highly concentrated in the outer suburbs and fringe. Zone statistics also confirm that the post-war suburbs have the highest concentrations of manufacturing workers, service and sales workers, and residents with no certificate, degree or diploma in 2006. In the outer suburbs and the urban fringe, relatively large households, more income earners per household on average, and high household incomes indicate that the outermost zones of the city remain attractive to families and that combined household incomes help to maintain suburban lifestyles. Zone statistics confirm that unlike in the Fordist metropolitan area, where immigrant concentrations were amassed in the inner city, the concentration of recent and more established immigrants is high in 2006 in both the post-war suburbs, and there are high concentrations of more established immigrants in the outer suburbs.

##### *Per Capita Income and Median Household Income*

For per capita income and household median income, affluence increased in the inner city and on the urban fringe and decreased in the post-war suburbs. In 1971, median household income is 86% of the CMA median household income in the inner city, while the post-war

Table 4.10 Concentration of Social Status Indicators among Urban Zones

	CMA	Inner City	Post-War Suburbs	Urban Fringe	Outer Suburbs
		1971	2006	1971	2006
<i>Income</i>					
Per Capita Income	1.00	0.99	1.32	0.94	1.07
Median Household Income	1.00	0.86	0.91	1.10	1.35
<i>Occupation</i>					
Management	1.00	0.76	1.12	1.14	1.15
Professional	1.00	1.04	1.37	0.99	0.86
Manufacturing	1.00	1.02	0.53	1.01	1.00
Service and Sales	1.00	1.00	0.97	0.95	0.90
<i>Educational Attainment</i>					
University Degree	1.00	1.13	1.36	0.94	0.95
Post-Secondary Certificate or Diploma	1.00	0.85	0.83	1.09	1.12
Secondary School Diploma	1.00	0.87	0.85	1.09	1.05
No Certificat, Degree or Diploma	1.00	1.07	0.94	1.02	0.96
<i>Labour Force Status</i>					
Unemployment Rate	1.00	1.20	0.99	0.89	0.81
<i>Household Composition</i>					
Average Household Size	1.00	0.92	0.77	1.05	0.96
Average Number of Income Earners Per Household	1.00	0.97	0.82	1.02	0.90
<i>Immigration</i>					
Recent Immigrants (Arrived up to 6 years before census)	1.00	1.43	0.75	0.82	1.45
Established Immigrants (Arrived 6 to 25 years before census)	1.00	1.10	0.70	0.98	1.11
				0.46	0.59
				0.76	0.90
					1.16

Source: Statistics Canada (1971B, 2008B)

suburbs and the urban fringe have median household incomes that are 110% of the CMA average. The increasing income gradient from the inner city to the suburbs no longer exists in 2006. Household income first decreases from 91% of the CMA median in the inner city to 88% of the CMA median in the post-war suburbs, then increases in the outer suburbs to 124% of the CMA median, and reaches the highest relative value in the urban fringe at 135% of the CMA median household income. Per capita income was relatively close to the CMA per capita income in both the inner city and the post-war suburbs in 1971, although it was low in the urban fringe at 94% of the CMA per capita income. By 2006, per capita income is highest in the inner city, rising to 132% of the CMA per capita income. The post-war suburbs have the lowest per capita income at 89% of the CMA value, and the outer suburbs also have relatively low per capita income at 93% of the CMA per capita income. The per capita income of the fringe has risen to 107% of the CMA per capita in 2006. Income levels have increased substantially in the urban fringe relative to the CMA overall, particularly for household income. The urban fringe is the most affluent urban zone in 2006 in terms of household income, at 135% of the CMA median. That household income in the outer suburbs is high relative to the rest of the CMA on average, while per capita income is relatively low, suggests that household characteristics are important to maintaining lifestyles in this zone. The only urban zone where income measures declined, relative to the overall CMA, is the post-war suburbs, and in 2006 this is the poorest zone on all income measures. The greatest increase is in the per capita income of the inner city, and the smallest increase occurred for the median household income of this zone, indicating the continued presence of low income households in the inner city, despite rising personal incomes, as was identified for earlier years by Bourne (1992).

#### *Concentrations in Urban Zones for Occupation Variables*

Table 4.10 shows that in 1971 concentrations of workers in each occupational category measured at the scale of the urban zone are fairly similar across the CMA. Generally, the location quotients calculated for all tracts within each urban zone range between plus or minus 5% of the CMA concentration of each occupational group in 1971, except for managers which are highly concentrated in the post-war suburbs and the urban fringe. By 2006, the spatial



concentration of workers between the urban zones had become more uneven. Again, the exception is that the residential concentration of managers has become more evenly distributed across the urban zones, although there are still considerable differences between the zones. Managers are concentrated in the outermost zones of the CMA in both census years, but by 2006 concentrations are also high in the inner city, where there had been relatively low concentrations in 1971. The 1971 location quotient for managers is 0.76 in the inner city, 1.16 in the post-war suburbs and 1.14 in the urban fringe. In 2006, the location quotient for managers is highest in the urban fringe, at 1.15, and is also high in the inner city at 1.12. The concentration of managers in the outer suburbs is close to the CMA level at 1.03, which is somewhat surprising given the many tracts with relatively high concentrations of managers that are apparent in the maps for 2006. The post-war suburbs have the lowest concentration of managers in 2006, with a location quotient of 0.83. Professionals are concentrated in the inner city in both years, but by 2006 the location quotient had increased from 1.04 to 1.37. The decline in the concentration of professionals across the urban zones in 2006 from the inner city to the urban fringe indicates the importance of central residential locations for professionals. There was a small increase in the concentration of service and sales workers in the post-war suburbs, with the location quotient rising from 1.01 to 1.07. Nonetheless, service and sales workers are the most evenly distributed occupational group in 2006. Manufacturing workers have a very low concentration in the inner city in 2006, with a location quotient of 0.53. The 2006 location quotient of 1.24 indicates a high concentration of manufacturing workers in the post-war suburbs. The concentration of manufacturing workers in the outer suburbs is close to one, with a concentration of 1.06. These zone-level location quotients tell a similar story to the maps of tract variations. Managers and professionals have become highly concentrated in the inner city. High concentrations of managers can also be found in the outer suburbs and the fringe. The post-war suburbs have seen rising concentrations of manufacturing workers, and service and sales workers, although the latter is more evenly distributed across the CMA than the former. Concentrations of manufacturing workers are moderately high in the outer suburbs, where managerial workers are also concentrated.

### *Concentrations in Urban Zones for Education Variables*

As for occupational variables, the trends identified among census tracts are supported by changes between urban zones in the concentration of residential with varying levels of educational attainment. Residents with no certificate, degree or diploma have become concentrated in the post-war suburbs, which is the only zone with a location quotient greater than one in the CMA in 2006 for this variable. Concentrations of university educated residents have increased in the inner city, and have risen moderately in the post-war suburbs and the urban fringe, but they have also become more uneven. This is largely due to the rising concentration of university educated residents in the inner city. Location quotients for university educated residents range from 0.80 in the urban fringe to 1.13 in the inner city in 1971, and range from 0.86 in the urban fringe to 1.36 in the inner city in 2006. The inner city is the only urban zone that has a greater proportion of university educated residents than the overall CMA in 2006 and 1971.

Concentrations of residents who have attained all other levels of education declined in the inner city over the study period. In 2006, residents with high school and post-secondary certificates or diplomas are concentrated in the outermost zones of the metropolis. Residents with a post-secondary certificate or diploma have a location quotient of 1.05 in the outer suburbs and 1.12 in the fringe in 2006. Residents with a high school diploma have a location quotient of 1.03 in outer suburbs and of 1.05 in the urban fringe in 2006. There are relatively low concentrations of university educated residents and those no certificate, degree or diploma in these outermost zones in 2006. In the inner city, university educated residents have become even more highly concentrated in 2006 than they were in 1971, while the concentration of residents has declined for all other levels of educational attainment. Whereas in 1971, the post-war suburbs have high concentrations of residents with high school and post-secondary certificates and diplomas, these concentrations have declined and by 2006 the post-war suburbs have the highest concentration of residents with no certificate, degree or diploma of any urban zone. The concentration of residents who have attained a high school or post-secondary certificate or diploma has moved further from the city centre as the metropolis has expanded;

in each census year, the highest concentrations of these residents can be found in the most recently constructed suburban ring and the urban fringe.

#### *Concentrations in Urban Zones for Unemployment Rates*

The changes in the relative unemployment rates of each urban zone reflect the changes that are apparent in the maps. In 1971, the unemployment rate in the inner city is 120% of the CMA rate. By comparison, the unemployment rate in the post-war suburbs is 89% of the CMA rate, and in the urban fringe the unemployment rate is 79% of the CMA rate. In 2006, among all urban zones the relative unemployment rate is highest in the post-war suburbs, at 117% of the rate for the CMA overall. The 2006 unemployment rates in the inner city and the outer suburbs are very close to that of the CMA overall, at 99% and 94% of the CMA rate respectively, while the urban fringe has a relatively low unemployment rate at 81% of the CMA rate. These statistics suggest that the inner city and the post-war suburbs have reversed their position with respect to the rest of the CMA. Although the definition of unemployment is somewhat different in the census years studied, it appears to have declined in the inner city, and increased in the post-war suburbs. The urban fringe has low relative unemployment rates in both census years, and in 2006 the outer suburban zone also has a relative low unemployment rate.

#### *Concentrations in Urban Zones for Average Household Size and the Ratio of Income Earners to Households*

Household composition variables provide further evidence of the increasing difference between the urban zones, but also of continuity in metropolitan social spatial structure. The ratios in Table 4.10 show that average household size and the ratio of income earners to households increase from the inner city to the outermost suburbs in both census years. These patterns suggest that the outward movement of families continues to shape social status differentials between urban zones. However, the relative difference between the urban zones has increased over the study period. In 1971, average household size increases from 92% of the CMA average in the inner city to 105% in the post-war suburbs, and then reaches a maximum

of 113% in the urban fringe. In 2006, average household size ranges from a low of 77% of the CMA average in the inner city to a high of 117% of the CMA average in the outer suburbs. The greatest contribution to the increased difference between the zones is from the relative decline in the average household size of the inner city. Households are already small, on average, in the inner city when compared to the overall CMA in 1971, and the relative average declines the most in this zone. The relative average household size of the post-war suburbs also declines from 105% of the CMA average in 1971 to 96% of the CMA average in 2006.

The ratio of earners to households was relatively even between the urban zones at the beginning of the study period. In 1971, the ratio of income earners to households was highest in the post-war suburbs, at 102% of the CMA ratio, and lowest in the inner city, at 97% of the CMA ratio. Over time the ratio declines in the inner city and the post-war suburbs and increases in the urban fringe. In 2006, the location quotient of earners to households is below the CMA average in the innermost zones of the CMA, at 82% of the CMA ratio in the inner city and 90% of the CMA ratio in the post-war suburbs. The outer suburbs and urban fringe in 2006 have ratios of earners to households that are considerably higher than the CMA ratio, at 118% of the CMA ratio in the outer suburbs, and 119% in the urban fringe. Thus, statistics calculated at the scale of the urban zone show similar results to the maps of census tract variations. Despite considerable change in household composition and lifestyles, the household composition variables measured here increase from the inner city to the outermost suburbs of the metropolis in both 1971 and in 2006. Although this pattern has persisted, with increased unevenness among urban zones, a new cleavage has appeared between the outermost and innermost zones of the metropolis in the average household income and the ratio of income earners to households.

### *Concentrations in Urban Zones for the Recent and Established Immigrants*

Changes in the zonal concentrations for immigrants are consistent with the trend toward the increased settlement of immigrants in suburban areas (Smith, 2004, Lo, 2008). Whereas in 1971 the inner city had the highest concentrations of both recently arrived and more settled residents, in 2006 the highest concentrations of are in the post-war suburbs for immigrants who arrived up to 6 years before the census and in the outer suburbs for immigrants who arrived 6

to 25 years before the census. The inner city is the only zone in the CMA where the concentration of immigrants declined, and the decline has been considerable: from 143% to 75% of the CMA proportion of recent immigrants, and from 110% to 70% of the CMA proportion of established immigrants. These declines run counter to the increases in the post-war suburbs, where the concentration of recent immigrants rose from 82% of the CMA proportion in 1971 to 145% in 2006, and the concentration of more established immigrants rose from 98% to 111% of the CMA proportion. The highest concentration of more established immigrants in 2006 is in the outer suburbs at 116% of the CMA level. Overall, the zonal statistics support the patterns found in maps of census tract concentrations. In a reversal of past settlement trends, which favoured the inner city, the residential location of many newcomers has become suburbanized.

#### **4.5 Concentrations of Social Status Indicators Among Income Ranges**

The preceding sections have established that income polarization is occurring among census tracts in terms of both per capita and household income. It has been shown that polarization and rising inequality have been accompanied by divergence in the income levels of different urban zones. In addition, it has been shown other indicators of social status are diverging between the urban zones. This final section considers social status indicators among census tracts in different income ranges. Table 4.11 shows the relative values of social status indicators among income ranges that are based on the median household income of tracts compared to the CMA median household income. Although the grouping of tracts is not based on per capita income, the per capita income of tracts increases with household income across the income ranges.

The highest concentration of managers is consistently in the high income tracts, at 2.39 in 1971 and 1.35 in 2006, although the concentration of managers in high income tracts has declined over the study period, and increased in tracts in the low and medium income ranges. Concentrations of professionals have also become more even across the income ranges. The highest concentration of professionals is still in the high income tracts in 2006, although this is 4% above the CMA level. While in 1971 low income tracts once had moderate concentrations of professionals and service and sales workers, at 104% and 106% of the CMA level,

Table 4.11 Concentration of Social Status Indicators among Income Ranges

		Low Income <75% of the CMA Median Household Income	Middle Income 75% to <125% of the CMA Median Household Income	High Income 125% and Over of the CMA Median Household Income				
CMA		1971	2006	1971	2006			
Income								
	Per Capita Income	1.00	0.80	0.96	0.91	1.44	1.34	
	Median Household Income	1.00	0.61	0.63	0.99	0.98	1.52	
Occupation								
	Management	1.00	0.54	0.67	0.85	0.89	2.39	1.35
	Professional	1.00	1.04	0.99	0.92	1.00	1.53	1.04
	Manufacturing	1.00	0.97	1.30	1.07	1.16	0.49	0.60
	Service and Sales	1.00	1.06	1.18	0.98	0.99	1.08	0.91
Educational Attainment								
	University Degree	1.00	1.02	0.92	0.82	0.97	2.22	1.17
	Post-Secondary Certificate or Diploma	1.00	0.75	0.95	1.00	0.98	1.20	1.02
	Scondary School Diploma	1.00	0.77	1.00	0.99	1.01	1.26	0.96
	No Certificat, Degree or Diploma	1.00	1.19	1.17	1.04	1.04	0.66	0.79
Labour Force Status								
	Unemployment Rate	1.00	1.56	1.39	0.98	1.01	0.72	0.79
Household Composition								
	Average Household Size	1.00	0.90	0.86	1.01	0.99	1.07	1.14
	Average Number of Income Earners Per Household	1.00	0.93	0.79	1.01	0.99	1.00	1.19
Immigration								
	Recent Immigrants (Arrived up to 6 years before the census)	1.00	1.62	1.77	0.99	1.05	0.59	0.53
	Established Immigrants (Arrived 6 to 25 years before the census)	1.00	0.91	1.20	1.04	1.11	0.79	0.82

Source: Statistics Canada (1971B, 2008B)

respectively, by 2006 these tracts are characterized by higher concentrations of manufacturing workers and service and sales workers, at 130% and 118% of the CMA level, respectively. Both manufacturing workers and service and sales workers are more evenly distributed across the income ranges in 1971 than in 2006. Over the study period, it appears that concentrations of manufacturing workers have increased in all three income ranges, including in the middle income range, although changes in the coding system for occupational data limit direct comparisons. It is clear, however, that the highest concentration of manufacturing workers in 1971 is in the middle income tracts at 107% of the CMA level, and that the highest concentration of manufacturing workers in 2006 is in the low income tracts at 130% of the CMA level.

The highest concentration of university educated residents is in the high income tracts in 2006, at 117% of the CMA level, despite the more even distribution of university educated residents among tracts of different income levels in the later census year. The concentration of university residents in low income tracts has declined over the study period from 102% to 92% of the CMA level. Concentrations of residents with high school or post-secondary certificates or diplomas are also more evenly distributed across tracts of different income ranges in 2006 than they are in 1971. The highest concentration of residents with a post-secondary certificate or diploma is 120% of the CMA level the high income tracts in 1971, and this declines to 102% of the CMA level in 2006. The highest concentration of residents with a high school diploma is in the high income tracts in 1971, at 126% of the CMA level, but the highest concentration is in the middle income tracts in 2006, at 101% of the CMA level, which is close to parity. Residents with no certificate, degree or diploma are concentrated in low income tracts in both census years, although there has been a slight decline from 119% of the CMA level to 117% of the CMA level.

Keeping in mind that differences in census definitions make direct comparisons difficult, unemployment rates appear to be considerably lower, at 139% of the CMA rate, in low income tracts in 2006 than they were in 1971 at 156% of the CMA rate. The relative unemployment rate appears to be fairly stable in the middle income tracts, at 98% of the CMA rate in 1971 and 101% of the CMA rate in 2006. In high income tracts, the relative unemployment rate rose from 72% to 79% of the CMA rate from 1971 to 2006. Although it

seems that unemployment rates have become more similar across the CMA over time, it is clear that they remain the highest in the low income tracts.

It is not too surprising that in both 1971 and 2006, tracts with high incomes have relatively high average household sizes, and tracts with low incomes have low average household sizes. However, the range of average household sizes among tracts of different income levels has increased over the study period, relative to the CMA average. The relative average household size declined in low income tracts from 90% of the CMA average to 86% of the CMA average, and increased in high income tracts from 107% of the CMA average to 114% of the CMA average. The ratio of income earners to households has also diverged over the study period. The location quotient of earners to households declined in low income tracts from 93% of the CMA average to 79% of the CMA average, and increased in high income tracts from 100% of the CMA average to 119% of the CMA average. Middle income tracts have a slightly lower average household size and slightly fewer income earners per household, relative to the CMA, in 2006 than in 1971, although these tracts are similar to the overall CMA in both years.

Immigrant concentrations have gone up in middle income tracts, rising to 105% of the CMA level of recent immigrants, and 111% of the CMA level of more established immigrants in 2006. The concentration of immigrants who have been in Canada for 6 to 25 years has also increased in the high income tracts, rising from 79% to 82% of the CMA level. Nonetheless, the highest concentration of established immigrants is no longer in the middle income tracts by 2006 as it was in 1971, but in the low income tracts at 120% of the CMA level, and this has increased from 91% of the CMA level in 1971. Recent immigrants have become more highly concentrated in low income tracts over the study period. The concentration of recent immigrants in low income tracts is 162% of the CMA level in 1971, and rises to 177% of the CMA level in 2006.



## 5.0 Conclusions

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Polarization is occurring in a manner that is different from the social spatial stratification of the Fordist city. Polarization and inequality among census tracts have increased, as was hypothesized, and this finding has been derived from histograms, quantiles, the Gini index and the  $P^{EGR}$  index. Polarization and inequality increased more for household income than for per capita income, which may indicate that the increased variability in living arrangements is exacerbating disparities among individuals. Nonetheless, although polarization has increased, incomes are not starkly polarized. Support has also been found for the hypothesis that the level of individual and household income has diverged between each of the urban zones. In the inner city, rising per capita incomes outstrip the increase in median household income. Both income measures declined across the post-war suburbs, except in persistently affluent enclaves. In the outer suburbs, there are disparities in tract per capita income, despite the high median household income in this zone. The urban fringe has become relatively affluent in terms of both per capita and median household income. This is different from the Fordist city, in which polarization was relatively low, and metropolitan spatial disparities were more or less arranged between the disadvantaged inner city, apart from some long-time wealthy enclaves, and the largely middle class suburbs.

Despite the complexity of contemporary metropolitan spatial structure, broad patterns are apparent in key dimensions of social status. The preceding analysis supports the hypothesis that for variables that are related to income polarization, social spatial differentiation is occurring between those areas of the city that may be identified by their period of development. Findings also lend credibility to the hypothesis that in the Toronto metropolitan area, there has been an increasing level of socioeconomic advantage in the inner city, relative decline in the post-war suburbs, and the sustained decentralization of advantage towards the ever expanding outermost suburbs and the urban fringe. In light of these findings, it must be remembered that polarization is not the only process that influences metropolitan social structure. Moreover, divergence between each of the urban zones is not the only spatial pattern identified. The divergence in social structure across urban zones, however, may indicate that urbanization dynamics influence the outcomes of polarization for metropolitan social structure.

## 5.1 Evidence of Spatial Divergence in Social Status

It is difficult to characterize the complex social structure of cities today (Nørgaard, 2003, Soja, 2000), much as it is difficult to assess the social implications of spatial disparities (van Kempen, 1994). This research has been limited to those aspects of social status that have been linked to income polarization in the literature, each of which contributes to the socioeconomic advantage or disadvantage of urban residents within a polarizing metropolitan social structure. In order to measure how social status is related to income disparities across metropolitan space, the concentration of social status indicators was calculated in high, middle and low income tracts for each census year. According to the literature, income polarization can occur when employment simultaneously increases in professional and managerial jobs, which bring in higher earnings and often require higher levels of education, and in lower status jobs, which do not pay well and that typically do not require a high level of education (Sassen, 2001, Storper and Scott, 2009). There are high concentrations of managers and university educated residents, and a moderate concentration of professionals in tracts with household incomes that are 125% or more of the metropolitan median household income. By 2006 there are high concentrations of service and sales workers, manufacturing workers, and residents who do not have any certificate, degree or diploma, in tracts where the median household income is less than 75% of the metropolitan median. As may be expected with labour market fragmentation (Amin, 1994, Harvey, 1990), the relative unemployment rate has become more similar across the metropolitan area over time, and has increased in high income tracts, although at least part of any change may be due to differences in the census definition of unemployment. Nonetheless, the relative unemployment rate is the highest in the low income tracts in both census years. In Toronto, unemployment and reliance on social assistance in general is a substantial source of income for many people at the low end of a polarizing income distribution, as is employment in low-wage jobs (Walks, 2001). The increased variability in living arrangements is also contributing to disparities in household income, as both single-income and dual income households have become more common (Bourne and Rose, 2001). The ratio of income earners to households and the average household size increased in high income tracts over the study period and decreased in low income tracts. With high levels of immigration in global cities such as Toronto, the increased heterogeneity of newcomers, and

their increasingly varied settlement trajectories shape metropolitan social structure, as much as it is shaped by their uneven labour market integration and disparities within and between minority groups (Walks and Bourne, 2006, Lo, 2008, Hiebert, 1999). Findings from the current research show that while both recent and more established immigrants have become more concentrated in middle income tracts, and the concentration of established immigrants in high income tracts has also increased, the highest concentrations of recent and established immigrants are in the low income tracts in 2006. Thus, concentrations of social status indicators, which have been linked to income polarization in the literature, diverged among tracts with high, medium and low income levels. The maps of tract concentrations and clusters have shown considerable variation in metropolitan social structure, and the existence of enduring spatial patterns, such as sectors. Nonetheless, it appears that the divergence in income levels in each of the urban zones has been accompanied by divergence in the concentration of variables that have been linked to income polarization. The following paragraphs synthesize the findings from this research to arrive at a description of Toronto's metropolitan social structure in both the Fordist and the contemporary periods.

## **5.2 The Fordist City**

On a number of social indicators, residents of the inner city in 1971 were relatively disadvantaged compared to suburban dwellers. In 1971, the median household income of the inner city was 86% of the CMA median. The unemployment rate was 120% of the rate for the CMA overall. Tracts with low per capita incomes form a 'U', starting in the downtown and extending in sectors toward the northwest and northeast along the rail corridors. High concentrations of manufacturing workers, residents with no certificate, degree or diploma, and immigrants can be found along these sectors. Nonetheless, there are also relatively advantaged tracts to the north of the inner city along the central sector that have relatively high concentrations of university educated residents, professionals and managers. A number of tracts with high ratios of income earners to households are clustered in the inner city. In some cases this may have enabled households to pool their incomes and buffer against unemployment. Although household composition in the inner city consists of smaller households, on average, maps show that there are more tracts with middle range household

incomes than there are with middle range per capita incomes. As housing demand shifted towards the newly constructed suburbs of the expanding city, the older housing stock of the inner city became available to households of more modest means, many of which were nonetheless able to achieve middle range household incomes.

Toronto's post-war suburbs experienced rapid population growth and development in the Fordist period (Murdie, 1969). Findings from this research show that by 1971 this urban zone was both relatively affluent and socially divergent from the inner city. There are no agglomerations of low income tracts in the post-war suburbs as there are in the inner city. Although there are a few relatively wealthy and a few poor tracts, suburban tracts generally fall within the middle ranges of plus or minus twenty-five percent of the CMA average for both per capita and household median incomes. Relatively low unemployment rates contribute to this, as do a concentration of managers in the overall zone that is 16% above the metropolitan concentration. With the settlement of families in suburban homes, the average household size is higher than in the inner city. Nonetheless, there were similarities between the zones. For some variables, the sectors that divide the inner city stretched across the suburbs. The high status central sector continued through the suburb of North York and into the urban fringe for tracts with high concentrations of managers and professionals, and residents with a university, college or high school education. The western sector extends through the west of North York and Etobicoke, and is comprised of tracts with high concentrations of manufacturing workers, and residents with no certification, degree or diploma. However, unlike in the inner city, most tracts in the suburban part of the western sector have per capita incomes in the middle range. This sector also contains high concentration clusters of immigrants who had been in Canada for 6 to 25 years, and who had become well enough established to move out of inner city enclaves to the suburbs of North York and Etobicoke.

In the urban fringe, it appears that the Fordist social structure reflects the presence of outlying towns and rural areas, although the precision of these findings are affected by the division of tracts over the study period. High concentration sectors of managers and professionals continue to the urban fringe, and another high concentration sector runs along the western waterfront in Peel and Halton Regions. There are also high concentrations of manufacturing workings in the municipalities of the urban fringe. The overall zone has a

relatively low per capita income, despite a relatively high household income on average, compared to the rest of the metropolitan area.

The social structure of Fordist city is relatively similar to what would be expected from classical urban ecology and theories of uneven development. Statistics for the overall urban zones show that average household sizes increase from the inner city to the urban fringe. Mapping shows prominent sectors of socioeconomic status, with low status-sectors following the eastern and western rail lines, and a centrally located high status sector beginning in the north of the inner city and extending across post-war suburbs, and, for some variables, into the urban fringe. Immigrant concentrations in the inner city and the post-war suburbs are in the area of the eastern and western sectors, with more recently arrived immigrants being concentrated in more central locations. The impact of the shift in investment toward the newly developed post-war suburbs is evident from maps of median household and per capita incomes. Low income tracts were highly clustered and centralized in the inner city, while wealthy clusters could be found in more decentralized locations to the north of inner city, and in the post-war suburbs and fringe. Notwithstanding this social spatial differentiation, most census tracts in the Fordist city fall into the middle income range.

### **5.3 The Polarizing Metropolis**

The characteristics of the inner city have been changing after the Fordist period, and this zone is now diverging from the surrounding suburbs in a new direction. Residents who are socioeconomically advantaged increasingly reside in central areas of the city. The earlier choice of a small segment of the middle class to reside in the inner city appears to have progressed to the point that it has changed the status of the inner city within the metropolitan region. There have been pronounced increases in the per capita incomes of tracts across the inner city. By 2006, the per capita income of the inner city is 32% above the metropolitan average, and the highest of all other urban zones. The median household income has not risen dramatically in the inner city, which is in part due to the presence of small households in this urban zone, as indicated by the relatively low average household sizes and low ratio of income earners to households in many tracts. Nonetheless, the inner city no longer has the lowest median household income of all the urban zones. Tracts with low household incomes that were

once clustered in the downtown have dispersed along the eastern and western sectors, and few statistically significant clusters of tracts with low median household incomes remain. What in the Fordist period were already high concentrations of university educated residents in this zone have increased further, and are now accompanied by relatively high concentrations of managers and professionals across the inner city. The advantaged central sector in the north of the Fordist inner city has expanded and extended to the waterfront. These changes reveal that the spatial impact of metropolitan social polarization is associated with the centralization of advantage across urban zones.

The post-war suburbs have also become a very different place after Fordism, and are now characterized by greater disparities and increased socially vulnerable populations. Income has declined in tracts across these once predominantly middle income suburbs. Tracts with less than 75% of the CMA median household income are dispersed throughout, and tracts with relatively low per capita incomes form broad sectors across the east and west of this zone. Although clusters of tracts with high median household and per capita incomes are less extensive, many of these tracts have maintained or increased their wealth, contributing to increased disparities in this zone. As discussed, the social status variables that have become more concentrated in low income tracts have also become more concentrated in the post-war suburbs. High concentration clusters for manufacturing workers have become more extensive, and clusters of tracts with high concentrations of service and sales workers have emerged. The post-war suburbs now have the highest unemployment rate when compared to the rest of the metropolitan area. The average household size in this zone has declined to below to metropolitan average, and so has the ratio of income earners to households. The broad western sector with high concentrations of residents who have not attained any certificate degree or diploma is most extensive in the post-war suburbs, when compared to the rest of the city. Tracts across the post-war suburbs saw increases of over 25% in the concentration of immigrants, particularly recent immigrants. These post-war suburbs now stand out in relation to the rest of the metropolitan area, as socioeconomic disadvantage has decentralized from the inner city to this urban zone.

The decentralization of affluence continues in the newly developed, outer suburbs as it did in the Fordist period. Those suburbs that were constructed since 1970 are more affluent in relation to the rest of the metropolitan area than those built in the Fordist period were, but the

newer suburbs are also more internally polarized across tracts. Median household income in the outer suburbs is 24% higher than the CMA median, and there are numerous tracts with median household incomes that are over 125% of the CMA median. On the other hand, disparities are apparent for tract per capita incomes within this zone. While per capita incomes were relatively even across the Fordist suburbs, this is not the case in 2006. The after-Fordist outer suburbs are peppered with tracts that have both high and low per capita incomes. The contrast between affluence at the household level and disparities at the individual level is highlighted by the finding that there are clusters of tracts with high median household incomes in the outer suburbs, but there are no statistically significant clusters of tracts with high per capita incomes. The presence of families may contribute to relatively low per capita incomes in some outer suburban tracts where there may be a relatively large population of residents who are under fifteen years of age, particularly in those tracts that appear to be located in the eastern and western sectors. The high ratio of income earners to households in the outer suburbs indicates that living arrangements, in which individual incomes are combined, are important to maintaining suburban lifestyles. Indeed, clusters of tracts with high ratios of income earners to households are only found in the outer suburbs. In the metropolitan area overall, there was a greater increase in household income polarization than in per capita income polarization over the study period, suggesting that living arrangements mitigate polarization less now than they did in the Fordist city. In the outer suburbs, however, household formation appears to largely counter per capita income polarization. Here, living arrangements are in fact boosting household incomes, as indicated by income statistics, relatively larger households and high ratios income earners to households.

The continued pull of the outermost zones of the city for affluent families, is also evident from the statistics calculated for the urban fringe. In the most remote urban zone of the metropolitan area there is a relatively high median household income, high average household size and high the ratio of earners to households. Moreover, these averages have increased in the urban fringe in the after-Fordist period. Nonetheless, the urban fringe is distinct from the suburbs in that the per capita income is above the CMA per capita income and has risen over time, which further contributes to the relative socioeconomic advantage of many residents in this area of the city.

The social composition of the Toronto metropolitan area shows that disparities across urban zones have increased, while measures of the distribution of tract incomes show that polarization has occurred. Urban expansion had left socioeconomically disadvantaged segments of the population behind in the Fordist inner city. However after Fordism, the inner city has become home to growing populations of socioeconomically advantaged residents, as concentrations of managers, professionals and university educated residents have increased in tracts across this zone. These trends are indicative of widespread gentrification and urban resurgence. Concurrently, per capita and household incomes have declined in the post-war suburbs, which in the Fordist period had been home to a predominantly middle-income population. By 2006, low income tracts and tracts in the post-war suburbs share a number of characteristics. It would seem that the post-war suburbs have lost much of their allure. They contain older, smaller housing with fewer amenities, compared to the newly built housing in the outer suburbs and urban fringe. On the other hand, the post-war suburbs have an automobile oriented urban form that does not foster the same sense of spontaneity and vibrancy that those who are attracted to the inner city associate with this high density urban zone. It would appear that the urbanization dynamics that shaped Fordist social spatial differentials are still at work. Many households with relatively high incomes choose to live in newer, larger housing in the outer suburbs and the urban fringe. The comparatively new dynamic of gentrification seems to have a growing affect on metropolitan social structure. As income polarization occurs between census tracts, both socioeconomic and demographic factors have combine so that socioeconomic disadvantage is becoming increasingly concentrated in the once relatively affluent post-war suburbs, at the same time that gentrification and professionalization have raised the socioeconomic status of the inner city, and the outermost zones of the city remain attractive to families with relatively high household incomes.

#### **5.4 Assessment of Possible Outcomes of a Polarizing Social Structure**

A range of possible outcomes of metropolitan polarization have been put forth from the entrenchment of past spatial disparities, to postmodern randomness, to the emergence of new spatial patterns. The alternative conceptions of the contemporary city vary in terms of the degree of order or chaos that they find in spatial patterns, and in the degree of continuity with



the Fordist city. Marcuse and Van Kempen's (2000) assertion that there is not a new metropolitan spatial order, but that the long-existing differences between the quarters of the city have intensified does not adequately explain the findings from this research. Sectors of socioeconomic status, and agglomerations of wealthy tracts have become entrenched in social structure, but even these quarters of the city have undergone a number of changes. For example, the educational profile of the affluent sector is not the same as it was at the beginning of the study period. In Fordist Toronto, the affluent sector contained high concentrations of university graduates and residents who had attained a high school or post-secondary certificate or diploma, but by 2006, of these educational attainment levels only high concentrations of university degree holders remain. It seems that the social changes that have accompanied polarization are associated with a re-ordering of urban space. Nonetheless, findings also do not reflect the haphazard metropolitan form that Dear and Flusty (1998) describe. The social structure of the city is far from chaotic. It appears that the relative consistency of the built form within metropolitan sub-regions constitutes a physical framework that intersects with social processes in coherent ways.

Some of Soja's (1997, 2000) theoretical precepts are applicable to the current case. First, it appears that the pre-existing urban form affects the manner in which polarization trends are spatially articulated. Second, the increased concentration of immigrants and low-income residents in the post-war suburbs would make the social structure of these suburbs more like what has in the past been recognized as urban, while rising affluence in the inner city would make it appear more like what in the past has been considered suburban. However, an important departure from Soja's interpretation of contemporary metropolitan form is that the social structure of the city does not appear to be "volatile". The shortcomings of factorial ecologies reveal the limits of the positivist approach to understanding urban social spatial change, but acknowledging these limits does not preclude the possibility that there are continuities over time or commonalities between places (Shearmur and Charron, 2004).

The changes identified here are similar to the patterns of "inner-city revalorisation, inner-suburban devalorisation, and continued outer-suburban growth" that Hackworth (2005) finds in the cities of Boston, New York, San-Francisco-Oakland, Washington, DC-Baltimore and Chicago (p. 516). Hackworth (2005) finds these patterns in the spatial distribution of income, which is indicative of social structure, in addition to indicators of investment and

disinvestment in the built environment. Findings from this thesis suggest that the Toronto metropolitan area exhibits new spatial patterns: the simultaneous centralization and decentralization of advantage, and the concentration of disadvantage in the once largely middle class post-war suburbs. The political implications of this restructuring may be indicative of the role of urban planning in guiding urban development in a manner that fits with both private and public sector interests. It appears that contemporary planning, along with other public interventions and market factors, is now part of a new urbanization dynamic that is reorganizing the city. Changing patterns of investment in the built environment may be leading to a new metropolitan form in which the relationships between the physical landscape and residential differentiation are rearticulated.

### **5.5 Spatial Polarization and Urbanization**

This research is not the first to identify that trends of widespread gentrification in the inner city, decline in the post-war suburbs, and the relative affluence of outer suburban households have accompanied widening income disparities in Toronto (Bourne, 1992, Murdie, 1998, Walks, 2001, Hulchanski, 2007). However, conclusions in the literature differ as to what outcome these trends are leading towards for the social structure of this metropolitan area. Although he acknowledges that per capita incomes have become relatively high in the downtown, Bourne (1992) concludes that there has been much stability in metropolitan social structure from 1950 to 1985, as household income continues to increase with distance from the city centre. Walks (2001) concludes that changes in social structure are leading to a contrast between the inner city and the post-war suburbs on the one hand, and the relatively affluent outer suburbs and the urban fringe on the other. Hulchanski's (2007) finds that socioeconomic status is increasing in central locations, and declining in the much of the post-war suburbs. Methodological differences no doubt contribute to these differing conclusions, particularly differences in the income variables measured and in the scale of analysis. For example, in the two most recent studies, Walks (2001) maps household income in the Toronto CMA, and Hulchanski (2007) maps individual income in the City of Toronto, which includes the inner city and most of the post-war suburbs, but not the outer suburbs or the urban fringe. In thesis, per capita income and household income are analyzed in the CMA, and distinctions are found

between each urban zone: in the inner city, the rise in per capita incomes outstrip the increase in median household income; both income measures declined across the post-war suburbs, except in persistently affluent enclaves; in the outer suburbs, there are disparities in tract per capita income, despite the high median household income in this zone; and the urban fringe has become relatively affluent in terms of both per capita and median household income.

Metropolitan wide trends in household and per capita income suggest that there has been pervasive change in Toronto's social structure. Although median household income is still relatively low in the inner city, it is the lowest in the post-war suburbs, which suggests that the Fordist household income gradient is no longer present by 2006. Similar to Walks, it was found that household incomes are relatively high in the outer suburbs and the urban fringe when compared to the inner city and the post-war suburbs. However, when per capita income is also considered it becomes possible to distinguish between each urban zone. The findings for per capita income in the inner city and the post-war suburbs are similar to those made by Hulchanski (2007) for individual income in these zones. The increase in per capita in the inner city is all the more striking when it is compared to the per capita incomes of the outermost zones of the CMA, which it surpasses by 2006.

The divergence in social structure across urban zones, may indicate that urbanization dynamics influence the outcomes of polarization for metropolitan social structure. Walks (2001) draws a connection between social spatial differentiation and the "contrast in development patterns between those zones built up during Fordism (the inner area and the mature suburbs) and the outer zones (the new suburbs and the exurbs)" (p.439). Findings from this thesis also suggest that contrasts in development patterns are contributing to spatial differentiation. However, it is possible to distinguish between the inner city and the post-war suburbs. Both household and per capita incomes are rising in much of the inner city, and declining in much of the post-war suburbs, and each of these zones has a distinctive built environment. Gentrification has occurred in a more extensive area of the inner city over time, prompting development and redevelopment of residential, amenity and employment uses (Melingrana and Skaburskis, 2005, Hackworth and Smith, 2001, Smith, 2002). The post-war suburbs were built during Fordism, when government investment in public infrastructure, including an equitable distribution of assisted housing and public amenities, comprehensive planning for transit and automobile travel, and a mix of housing types and tenures was central

to metropolitan physical expansion and economic growth (Filion, 1996, Donald, 2002A, Frisken, 2007). In contrast to the post-war suburbs, the suburbs built after Fordism are more privately oriented with the advent of common interest communities, larger and more opulent homes, less rental housing, and a continued, if not heightened, reliance on the private vehicles for transportation (Dwyer, 2007, 2008, Schuetz, 2009, Townshend, 2006, Lang, Blakely and Gough, 2005). These urbanization dynamics have lead to a divergence in the housing stock between the urban zones, which may affect how spatial polarization is manifested across the metropolitan area. Or put another way, the new spatial patterns in social status variables suggest that urbanization dynamics may contribute to the spatial articulation of polarization.

Of course, there are many processes other than polarization that affect social spatial structure. The findings here are limited to particular changes in social structure that have been related to polarization in the literature. Moreover, changes in urbanization dynamics have not been measured, but have been delineated from the literature, and attributed to urban zones that have been defined based on the time period in which they were developed. (This is similar to the approach taken by Bunting and Filion (1996), Walks (2001), and Holiday and Dwyer (2009)). Future research could incorporate additional measures of urban form.

## **5.6 Caveats, Limitations and a Direction for Future Research**

Some of the evidence collected here contradicts the preceding interpretation. First, in both years and for both income measure, there are high income clusters that overlap the boundaries between the north and west of the inner city and the south of the post-war suburbs. Nonetheless, the locations of these clusters shift over the study period in a manner that is consistent with the rising affluence in the inner city and declining affluence in the post-war suburbs. Second, maps for both census years also show that many of the classic Chicago School patterns have endured, but this does not mean that the social structure of the urban zones did not diverge over the study period. Changes along the sectors of socioeconomic status reflect zonal divergence. Average household size continues to rise with distance from the center of the city, but differences between the urban zones have increased along this dimension. Immigrants continue to be concentrated in low income tracts as they were during Fordism. However, the concentration of immigrants in middle income tracts has increased, and

the concentration of more established immigrants has increased in high income tracts. Moreover, concentrations of immigrants can now be found primarily in the suburbs, rather than the inner city. Third, in terms of 2006 median household income, it is possible to distinguish between the innermost and outermost zones of the CMA. Yet, when changes in household income are measured it can be seen that the inner city and the post-war suburbs are moving in different directions. When per capita income is also considered, it becomes apparent that polarization is occurring in a different manner in each urban zone. Overall, it would appear many of the defining features of Fordist metropolitan social structure persist, including high income enclaves, sectors of socioeconomic status, and radial variations in household composition. Nonetheless, there is also evidence that spatial variation in income and other social status indicators has diverged within areas of the city that were developed in different societal contexts, with different planning approaches, and that have different land use and transportation dynamics.

There are limitations to the current research. Theoretically, findings are interpreted in light of the transition from Fordism to the after-Fordist context, which simplifies history into a coherent narrative for the purposes of analysis. In light of this, it is important to recall that local histories and institutional contexts mediate global economic restructuring and influence neoliberal policy shifts, and that the outcomes of polarization in any city are contingent on a number of factors. The generalizations made here are not meant to disregard the social heterogeneity within urban zones that are apparent on the maps presented in this thesis. It should be remembered that census tracts are artificially created units of analysis, and findings are affected by the delineation of tract boundaries. It is also important to acknowledge that the variables measured in this analysis do not provide a comprehensive view of the plethora of identities and communities that are present in the contemporary city, and that affect how inequities are defined and experienced (Soja, 2000).

There are a number of further methodological limitations. First, the data from the 1971 census was matched to the 2006 tract boundaries. While this allows the social structure of the outer suburbs to be measured, it also affects the precision of the 1971 maps and the maps of tract level changes where census tracts have been subdivided over the study period, particularly in the area of the city that was part of the urban fringe in 1971. Second, changes to variable definitions between the censuses must be kept in mind when interpreting findings, including

different coding schemes for occupation, and different criteria for defining unemployment. Third, changes to the way that income data was collected in the census mean that the level of polarization between 1971 and 2006 may be exaggerated. This weakness has been mitigated by the examination of income polarization in 2001, which has confirmed the direction of polarization trends. Fourth, the polarization index used here requires that the researcher divide the income data into a predetermined number of groups, which could influence the degree of polarization detected by the index. A method for dividing the income data into groups based in the inherent variability in the data is used to address this limitation. Overall, the direction of change is the most reliable finding concerning income polarization, and the direction of change is supported by the analysis of histograms, quantiles, and the Gini index. Fifth, the patterns apparent in the choropleth maps are also influenced by the grouping of the data selected by the researcher, and this is a potential source of systemic error. This limitation is addressed by using Local Moran's I to identify statistically significant clusters and outliers. Sixth, Local Moran's I may exaggerate differences and similarities at the edges of the study area, because these tracts have fewer neighbours. This is mitigated by the use of row standardized weighting, but still must be kept in mind when interpreting results. Seventh, the z-score hypothesis test used to identify significant spatial clusters and outliers assumes independence between the features. This assumption is violated, because the test uses many of the same neighbours for adjacent features. Mitchell (2005) recommends using a Bonferroni correction to account for this. The Bonferroni correction reduces the possibility of a type I error (i.e. identifying a statistically significant cluster or outlier where there is none). While this accounts for the inherent lack of independence in spatial data, it increases the risk of a type II error (i.e. not identifying a cluster or outlier that is actually statistically significant). Nonetheless, the Bonferroni correction may lead to more conservative conclusions: the patterns in the data may actually be more extensive than are found at the higher confidence level. With these limitations in mind, the analysis has provided evidence that is good enough to assess the hypotheses.

In this thesis, the in-depth analysis of one city has facilitated the consideration of a range of urban processes in light of current theory, but as with all single-case studies, it does not show whether the city of interest is unique or representative of other cities. It may be worthwhile to do a comparative analysis of the social structure of other large Canadian cities. The extent of each urban zone and its population may be different in each city, due to the local

development history, and this may affect the level of polarization. One hypothesis that could be tested is that each city is unique from the others in any one year, but that there are common trends over time in the inner cities, inner suburbs, outer suburbs and urban fringe of all cities. There is evidence in the literature that both supports and refutes this hypothesis. Skarburskis and Moos (2008) find that in Montreal, Vancouver and Toronto there has been a transfer of residential property values in favour of the inner city and the new suburbs, and at the expense of the older suburbs, after accounting for the addition new homes. Although they point out that considerable local variations in property values temper broad-scale conclusions, and they do not measure the social status of residents, these common trends in residential property values could be associated with changes in social structure with respect to the urban zones of these large Canadian cities. Alternatively, it may be possible to identify a typology of possible outcomes. A forthcoming paper by Walks (forthcoming 2011), examines the level of polarization and segregation in the five largest Canadian metropolitan regions. He finds a common trend wherein spatial polarization increased from 1970 to 2005, due to disparities between owners and renters, who are being excluded from both post-1970s suburban areas where ownership tenure dominates, and gentrifying areas where housing is being deconverted from rental to ownership tenure. Measures of spatial segregation for the rich and poor, however, reveal three types of change. In Toronto and Vancouver the segregation of the poor has been stable or declined since 1990, while the segregation of the rich has increased. In Montreal and Ottawa-Gatineau the segregation of the poor has been continuous, while the segregation of the wealthy took off from 2000 to 2005. Calgary shows a distinctive trend where segregation of the poor has been increasing since 1980, but the segregation of the rich increased to 1990 and then returned to the 1980 level. The distinct institutional context, cultural milieu and economic base of each of these cities will affect the spatial articulation of polarization trends. Nonetheless, a comparative analysis could shed more light on how urban development, redevelopment and the resulting land use and transportation dynamics in each city impact the spatial articulation of polarization.

## **5.7 Urban Planning Challenges in the Polarizing Metropolis**

It appears that the quantitative differences in metropolitan social structure that accompany increasing polarization are associated with a qualitatively new metropolitan form, which is markedly different from social spatial stratification of the past. This new metropolitan social structure has new spatial patterns (Sassen, 2001, Fainstein, 2001). Findings from this research show that while polarization has occurred, the social composition of the inner city, the post war suburbs, the outer suburbs and the urban fringe are diverging in new ways. If the contention is accepted that the built environment affects how polarization is expressed spatially, it means that the way that we plan cities makes a difference.

The patterns uncovered in this thesis are most like those found by Hackworth (2005) in particular cities where neoliberal policies have been adopted. According to Hackworth, new spatial patterns have arisen from the development strategies of public and private interests. To some extent this interpretation may understate the importance of consumer preferences as a factor in delineating the most desirable locations in the city, and simultaneously those areas that accommodate people who cannot find affordable housing elsewhere. Consumer preference has been theorized as a key factor in the perpetuation of suburban style development (Bunting and Filion, 1999), and of inner city redevelopment (Hamnett, 1991). Keeping this in mind, as in the Fordist city, the contemporary city is shaped by a range of factors, such as consumer preferences for different living environments, private investment decisions that influence housing supply, and public interventions, which include urban planning.

Whether or not planners in the public sector actively promote exclusive forms of developments, these developments present a challenge to the profession, because they meet some, but not all of planning goals. For example, many gated communities are built at higher densities than conventional suburban development and so meet planning goals for intensification, and the provision of private roads and amenities reduces the cost of development to municipal governments (Grant, 2005). However, common interest communities are inherently exclusive, and so they are not planned with the broader public in mind. Nonetheless, even if gated communities are still relatively rare in Canada, it could be said that this more extreme form of common interest development represents one aspect of an overall trend whereby suburban development increasingly caters to private interests rather than



the public interest (Townshend, 2006). New suburban homes are increasingly built for the high end of the market, which contributes to the spatial segregation of affluent homeowners (Dwyer, 2007). As with common interest developments, luxury condominiums, which are becoming increasingly prevalent in Toronto, particularly in the downtown, provide a range of security and amenity options that again reduce the burden on municipal governments of providing these services, while contributing towards intensification goals (Kern, 2007). Moreover, the redevelopment of inner city commercial, cultural and leisure oriented land uses has become a widely adopted strategy for metropolitan economic competitiveness (Smith, 2002, Harvey, 1989). However, as property values increase in neighbourhoods that once housed residents with low to moderate incomes, some residents are forced to move, and others who do not have the means to afford living in that area simply do not move in (Slater, 2004). If the process continues, the social composition of the neighbourhood may become increasingly homogenous (Walks and Maaranen, 2008).

The physical environment can also exacerbate social disparities. For many middle income and more affluent households, the dispersed landscape of the suburbs is not a problem, and the outer suburbs provide a commodious environment for the lifestyles they wish to pursue. However, sparse transit service inhibits the travel of those that rely on it, and the relatively fixed financial cost of owning an automobile is a greater burden on low income households. The increasing presence of exclusive common interest communities in the outer suburbs further discourages lower income households from moving to this expanding urban sub-region. The residents of those scattered tracts in the outer suburbs with high unemployment rates and low per capita incomes are relatively isolated. There are no statistically significant clusters of tracts with high relative unemployment or low per capita incomes in the outer suburbs of Toronto. At the same time, the increased presence of advantaged tracts in the inner city, with high concentrations of university educated residents, managers and professionals, increases the accessibility for these residents of centrally located agglomerations of business and financial services, which can offer employment opportunities. A further advantage to residents in the inner city comes from the proximity to rail transit, such as subways and street cars. In such a high density environment travel by car does not necessarily improve travel times or allow access to a greater range of activities. Proximity to a reliable transit route allows residents

access to an alternative transportation mode, and can increase their property values. In these ways, the urban fabric becomes a factor that contributes to polarization.

Recent attempts to redress these spatial inequalities have been made by the City of Toronto, which contains within its borders the inner city and much of the post-war suburbs. A new municipal focus on priority neighbourhoods, which have high poverty rates and which are located in the relatively under serviced post-war suburbs, has seen a rapid expansion of programming and a targeting of funds to these areas, but the outcomes are still uncertain (Dale, 2010). The most recent transit plan for Toronto, Transit City, aims to expand rail service across the post-war suburbs, and implementation has begun. However, the Province recently delayed funding for the plan in an effort to reduce a historically large deficit in the wake of the recent recession (Kalinowski, Benzie and Doolittle, 2010). The burden of addressing the negative outcomes of metropolitan social polarization is being shouldered by one local government.

Exclusive development forms intersect with polarization. As the population of those who can purchase into the new high amenity city grows, the demand for these forms of development increases, and then so does the supply. To the extent that the new city can be built in a manner that meets many planning goals, it also receives public sector support. In the after-Fordist period, with the popularity of neoliberal approaches to policy making, funding for social welfare has stagnated, and full employment goals have been abandoned. This has reduced the effectiveness of public programs in providing for the increasing population of those who do not bring in enough income to purchase into the new city. Political pressure to improve the city's position as a globally competitive one for business and investment mounts along with the growing social imperative to address spatial disparities. Ultimately, public funds must be allocated towards the creation of an attractive urban environment, while at the same time ameliorating the living conditions of an increasing population of disadvantaged residents. These goals are at odds with each other to the extent that metropolitan economic growth is driving social spatial polarization.

## 6.0 References

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